LIBRARY OF CONGRESS
JAN
31
1904

# THE AUTOMOBILE

WEEKLY NEW YORK—SATURDAY, JANUARY 30, 1904—CHICAGO 10 CENTS

Packard

WEIGHT 1870 lbs.

22 HORSE POWER

PRICE $3000.00

PACKARD MOTOR CAR COMPANY

DEPT. 2. DETROIT, MICH., U.S.A.

MEMBER OF THE ASSOCIATION OF LICENSED AUTOMOBILE MANUFACTURERS.

# G & J Detachable

# TIRES

THE TEST OF TIME simply emphasizes their superiority. The harder the tests the more the worth of G & J TIRES is made apparent.

**Barney Oldfield and G & J TIRES brought the Automobile Mile Record to 55 4-5 Seconds** ON A CIRCULAR TROTTING TRACK AT YONKERS, N. Y., JULY 25, 1903

The terrific strain to which G & J TIRES were subjected in this dare-devil feat can be but faintly imagined. But once more they stood the test, conclusively demonstrating that they cannot be pulled off, ground off or made to show weakness in any way. They are the only ones that can't.

G & J TIRES COMBINE SPEED WITH COMFORT, AND SAFETY WITH BOTH.

New York Selling Agency
81 READE STREET

G&J TIRE CO.

INDIANAPOLIS, IND.
U. S. A.

*NEW YORK SHOW, Space 147* *CHICAGO SHOW, Spaces 153 and 154*

---

This is one of our new series of daily paper advertisements which will surely enormously increase the sale of

# KNOX 1904 CARS

HAVE YOU ORDERED YOURS YET?

**PRINCIPAL AGENCIES.**

New York, Knox Automobile Co., 152 W. 38th St.
Boston, The Reed-Underhill Co., 41 Stanhope St.
San Francisco, National Auto. & Mfrs. Co., 134-146 Golden Gate Ave.
Philadelphia, Knox Automobile Co., 16th and Wood Sts.
Pittsburg, Louis E. Reneman, 315 Frick Bldg.
Minneapolis, Northwestern Motor Vehicle Co., 112 S. Sixth St.
Fall River, Mass., J. Edward Newton.
Providence, R. I., Davis Automobile Co., 79-83 Mathewson St.
Hartford, Conn., S. A. Miner, 304 Allyn St.
Paterson, N. J., The Auto Shop, 450 Broadway.
Marlboro, Mass., Frank Billings.
St. Louis, Mississippi Valley Auto. Co., 3935 Olive St.
Worcester, Mass., Harrington's Auto Station No. 1.
Denver, Colorado Auto. Co., Court Place.
Milwaukee, Wis., Geo. A. Crane, 187 Wisconsin St.
Louisville, Sutcliffe & Co., 1051 Third St.
Brooklyn, N. Y., A. R. Townsend, 1148 Bedford Ave.
New Haven, Conn., C. H. Torrey, 751 Chapel St.
Baltimore, Md., Maryland Automobile Co., 24 E. 21st St.
Columbus, Ohio, Oscar Lear Co., 201 S. High St.
Indianapolis, Ind., Indiana Auto. Co., Monument Place.
Lowell, Mass., W. H. Greene, 91 Appleton St.
Troy, N. Y., James Lucey, 359 Fulton St.
Grand Rapids, Mich., Adams & Hart, 12 W. Bridge St.
Bridgeport, Conn., W. S. Brandegee, 615 State St.
Chicago, Ill., Geo. H. Crane, 521 to 531 Wabash Ave.
Portland, Me., H. J. Willard, 28 E. Promenade.

**NEW YORK SHOW SPACES, 61-62-63 Madison Square Garden**

KNOX AUTOMOBILE CO., Springfield, Mass.

K ♦

are the diamonds of the automobile world. They are known value and the most valuable known. They are brilliant as diamonds in service and always at par, easy to operate, and wear like diamonds. Examine the Knox patent air-cooling system. The only *high power* engine cooled by air. The ideal winter machine. You can save repairs by using the Knox. They have every tested modern improvement.

TONNEAUS, SURREYS, and RUNABOUTS

Six Styles Passenger Cars and Six Styles Commercial Cars to Choose From.

Send for catalogue

Knox Automobile Company, Springfield, Mass.

*Member Association of Licensed Automobile Manufacturers*

♦ K

THE AUTOMOBILE

WEEKLY NEW YORK—SATURDAY, JANUARY 30, 1904—CHICAGO 10 CENTS

FEB 1 1904
Copyright Entry
CLASS XXc. No.
COPY B

# CLOSE OF THE NEW YORK SHOW.

IN point of attendance, diversity of exhibits, average high merit of product, and volume of business transacted, the Fourth Annual Automobile Show has so far surpassed previous exhibitions in Madison Square Garden that it compares with the Paris Salon de l'Automobile.

The paid admissions are stated by the Garden management to be 50,000—a number several thousands in excess of the total attendance last year. The aisles of the Garden were crowded to the point of discomfort from the early morning opening hour until the close each night. That the fixture has proved to be a great educator was shown by the character of the inquiries made by casual visitors, the engines and transmission devices of cars receiving quite as much attention as the luxurious upholstery and brass mountings.

Approximate figures only are obtainable in the matter of sales to private owners, but a conservative estimate of the total sales during the show places the number at 208, of which 149 were American built machines and 59 of foreign manufacture. Contracts with agents and dealers indicate a disposal of from one-half to two-thirds of the entire output of the year.

The demand of the public was largely for cars of the so-called touring type, persons of ample means showing interest only in high-powered cars with luxurious bodies, canopy tops and closely following the French type. A wide range in price was offered by the cars shown, from the handy little Orient Buckboard at $425 to the 60-horse power Cannstatt Mercedes at $18,000.

Many of the most interesting things at the show were found in the restaurant, where the exhibitors, with two exceptions, had foreign cars on view. The features of these cars, many of them shown for the first time in America, are of too much moment for such a hurried notice as was possible in the last issue of THE AUTOMOBILE, and the entire section is described in detail and illustrated with flashlight photographs in the pages that follow.

HOW MADISON SQUARE GARDEN APPEARED AT NIGHT WITH THE ILLUMINATED SIGNS LIGHTED.

# EXHIBITS IN THE FOREIGN SECTION.

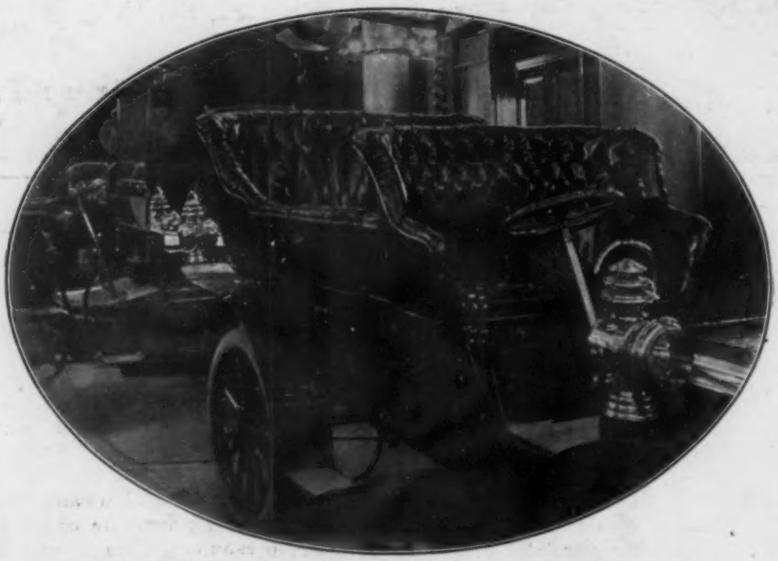
*New York Garage Company.*—Six Georges Richard-Brasier cars were shown; three of the 12-15-hp. two-cylinder, one 20-24, one 24-30 and a 50-55; the latter being a chain-driven machine as opposed to the well-known propeller-shaft drive found on all models of lower horsepower. One of the most radical changes found in the 1904 Richard-Brasier chassis is the change from built-up tubing to pressed steel frames. The under frame which is of tubing extends about two-thirds of the length of the chassis and is carried by H section cradle-shaped cross members.

Flexible and detachable connection is made between the clutch and the change speed by a special form of universal joint, which admits of ready detachment of the male clutch member or the change speed mechanism.

The engine is controlled by a throttle acting on each pair of the induction pipes, the inlet valves being mechanically actuated by a camshaft. Ignition is by magneto and is constant except when it is retarded for starting. Thermo-syphon water circulation is used instead of the usual pump.

A useful combination body was shown on a two-cylinder 12-15-hp. chassis which may be changed from a limousine to a tonneau or single-seated machine in five minutes.

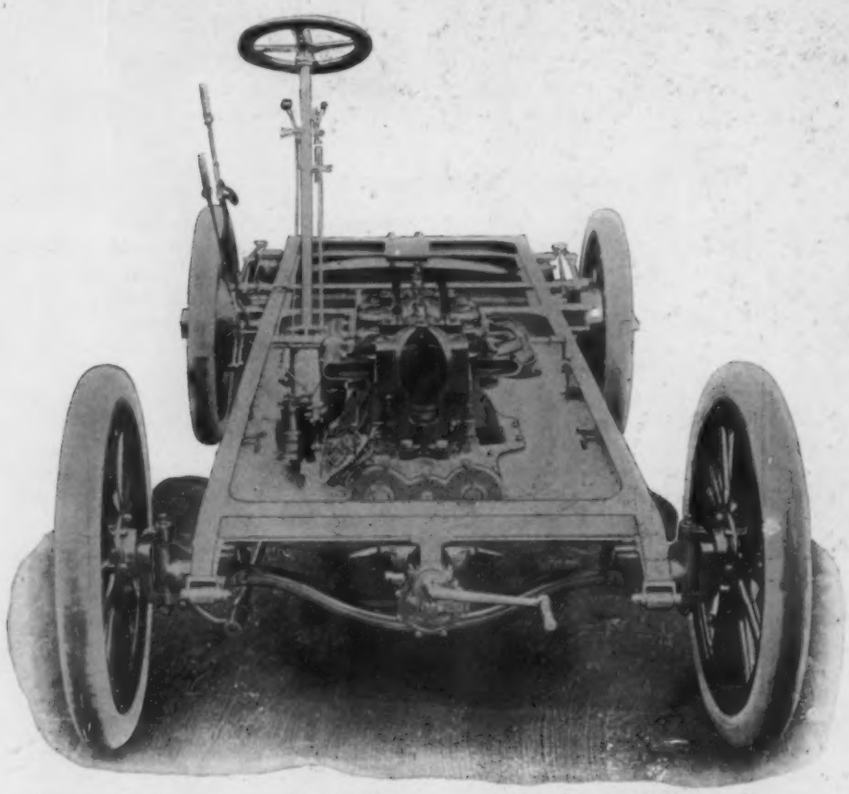
The usual detachable tonneau lifts off of the frame and the complete rear portion is bolted on, making a substantial and attractive vehicle with a large range of usefulness. The complete outfit, including both bodies is listed at $5,000.



RICHARD-BRASIER TONNEAU WITH DOORS ON BOTH SIDES.

A distinct novelty is shown in the 20-25-hp. four-cylinder tonneau car with side entrance from either side.

*Standard Automobile Company.*—A radical departure in sub-frame construction was seen in the superbly finished exhibition chassis of the 16-hp. four-cylinder Decauville. To the usual pressed steel frame a one-piece cupped sheet steel web is securely riveted and carries the engine and transmission; suitable openings being provided in the web to admit the one-piece engine, flywheel and transmission casing, which is bolted to the sheet steel subframe. The engine and change speed with the frame form a unit with ample strength to withstand the most severe road strains and at the same time a construction is provided which affords the most ample protection from dirt and water to the entire power plant of the automobile. Accessibility to the parts has in no way been sacrificed and the one-piece sheet steel subframe may be welcomed as a big step forward in construction.



DECAUVILLE CHASSIS, SHOWING PRESSED WEB AND CUT-AWAY ENGINE.

The cylinders and valves of the chassis are cut out to show the action of the engine and the parts are finished in a beautiful manner. Mechanically actuated induction valves are fitted with two camshafts, right and left, and in the transmission, four speeds forward and reverse are provided with direct drive on fourth speed. The rear wheels are carried on ball bearings and the hub ends are formed to engage with a four-arm spider forged integrally with the driving member of the axle, no load being carried on the housed live shafts of the rear axle.

Of the 1904 type two finished vehicles were shown, a two-cylinder 10-hp. and a four-cylinder 18-hp., both with bodies by Quinby. A two-cylinder car of the late model of last year's type was also on view.

*Sintz Gas Engine Company.*—The Pungs-Finch car was shown, a machine designed on French lines and intended to be sold at a low price. The frame is angle steel with

wood sills, with detachable tonneau body, cellular radiator and right hand control through the usual wheel and levers outside of the body. Three speed and reverse are fitted with bevel gear drive to the rear live axle. The engine is a four-cylinder vertical high-speed motor with mechanical inlet valves and is rated at 13-horsepower.

The complete machine is listed at $1250.

*C. L. Charley.*—It is to be regretted that the 1904 Mercedes was not on view in the stand of this exhibit, the only specimen in the country of this year's product of the great Cannstatt factory being the 90-hp. Vanderbilt racer which was sent to Florida for the racer meet. The changes in the Mercedes are said to be slight but are of much interest to the automobile world.

MERCEDES 18-22-HP. LANDAULET WITH ROTHSCHILD BODY.

Only complete machines were shown, a 18-22-hp. landaulet by Rothschild; a 28-32-hp. tonneau, with side entrance, by Véndrine and two of 60-hp., one with rear entrance tonneau and canopy top and the other with side entrance by swinging the left front seat forward. The seat travels on a steel track with an easy-running wheeled carriage and may be opened or closed with an occupant in the seat. The forward sprocket is covered by a steel plate box which opens for ready inspection of the chain or wheel, at the same time serving as a step to give easy access to the tonneau.

The famous Mercedes carbureter is shown in several sizes.

*Smith & Mabley.*—The most noticeable machine in the exhibit of this firm was a Smith & Mabley Simplex, with burnished aluminum semi-racing body by J. M. Quinby & Co. The highly polished surface had an irresistible attraction for visitors and many favorable comments were heard of Messrs. Quinby's work. The chassis of the Simplex is built with an armored wood frame with forged steel dumb irons and long springs following the best French practice. The engine is a four-cylinder, 4 x 4 1-2 inches with a rating of 18-22 horsepower, with automatic induction valves, four speeds and reverse with top speed direct drive by chains to the rear wheels. A water jacketed carbureter is fitted with automatic throttle control by belt drive from the camshaft.

A Whitlock radiator, with belt driven fan from the cam shaft, is used for water cooling. A commendable detail is the use of forward thrust pedal control.

Two Renault landaulets were shown, with bodies by Kelner of Paris, one with commodious luggage boot at the rear with access to the same from the back or from under the seat. The chassis of the closed cars were the 10-horsepower two-cylinder tubular frame Renault of the model of last year. Another 1903 Renault with four-cylinders, rated at 14 horsepower, was shown fitted with King of Belgians tonneau by Quinby. The canopy top of this car was provided with curved quarter glasses and swinging back door of heavy plate, a construction popular in France, but not yet used to any extent here.

Two Panhards completed the exhibit, one a 24-horsepower with very roomy and luxurious double phaeton body by Muhlbacher et fils, with side entrance, the left half of the front seat swinging forward on a light running wheeled track for entrance to the rear seat; and a 15-horsepower, with tonneau, by Quinby, with the new French style waterproof sole leather side and golf baskets. The 24-horsepower phaeton was fitted with a brown canvas Cape cart hood, which promises to be a popular style of top for touring cars this year.

*Central Automobile Company.*—The Mors agents showed only 1903 models of this famous car; this year's machines not being expected until the first of May. Three finished machines were on view, an 18-hp. four-cylinder with Quinby aluminum curved back tonneau. with canopy top, the body royal blue with running gear grosbeck red; an 11-hp. car with Quinby fish-tail road-racing body in English ver-million and a car of the same power with luxurious detachable limousine by Kelner. The Central Auto. Co. has secured the agency for the English Napier cars and will soon have a specimen of the six-cylinder Napier on view at their garage.

*Kenneth A. Skinner.*—The De Dion Populaire and the 9-horsepower De Dion tonneau were shown. These popular and reliable vehicles have not been changed except in minor details with refinements here and there in matters of weight and radiator design

A new car, the Boyer, has been taken on by Mr. Skinner, and a well-finished chassis was exhibited. The frame is of angle steel filled with hard wood, with extra long wheel-base, 104 inches, permitting a very roomy tonneau being fitted or a closed body of any type. The power plant consists of a four-cylinder 24-horsepower engine with corrugated seamless sheet steel water jackets; interchangeable inlet and exhaust

valves, actuated by cam shaft driven by helical gears. The induction chambers open into a cylindrical aluminum reservoir, the design being to provide a constant supply of gas instead of the intermittent feed when the inlet is taken direct from the carbureter. The exhaust side of the engine is fitted with a similar chamber for the expansion of the burnt gases before they pass to the silencer.

*Bowman Automobile Company.*—The voitures légeres Bayard, A. Clément, constructeur, were shown in the spaces directly to the right of the entrance to the restaurant. The line on exhibition comprised five types of the Clément cars, a very light 10-horsepower two-cylinder tonneau selling for $2,000; a 12-horsepower two-cylinder tonneau with the latest type of mechanically actuated induction valves; a 15-horsepower four-cylinder car with natural wood low-back tonneau; a 20-horsepower four-cylinder Leopold tonneau, and a 12-horsepower two-cylinder brougham, with particularly harmonious lines and luxurious fittings,which is listed at $4,500, a low price for such a handsome closed car.

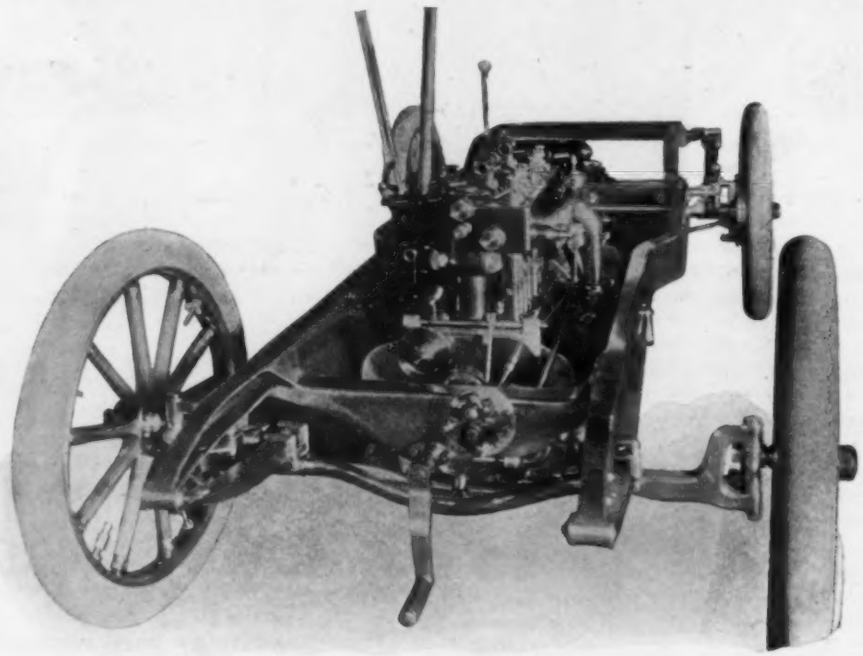
In addition to the complete cars, a beautifully finished chassis of the 20-horsepower car was shown, side by side with a completed stock car of the same type, which compared in finish to a remarkable degree with the Paris salon chassis. The engine of the 20-horsepower is made up of four single cast cylinders with the induction valves on the right and the exhaust on the left, driven by two camshafts, the right camshaft also actuating the make and break device and driving the magneto.

The pump is of gunmetal, bolted to the upper half of the aluminum crank chamber, set level with the lower end of the cylinders and driven by gears from the left camshaft. The governor is fitted to an extension of the left half-time shaft and controls a throttle valve above the carbureter, suitable connections being provided for throttling the engine by means of a small lever on the top of the steering wheel. Spark advance is accomplished by the movement of a second hand lever moving in a notched quadrant on the top of the steering wheel, varying the position of the cams actuating the contact breakers and at the same time changing the position of the rotating armature of the magneto in consonance with the make-and-break. The usual wire cables have been discontinued and ignition and throttle control are accomplished by means of steel rods with ball and socket joints. Cables have also been suppressed in the pedal controlling mechanism, substantial steel rods being used to operate the clutch and foot brake.

The speed change gives four speeds forward and reverse with direct through drive to the rear wheels on fourth speed by propeller shaft and bevel gear. The foot brake, as well as the emergency, is of the internal expanding type. A toothed rim is provided on the periphery of the foot brake drum with a pawl which acts as an efficient sprag to hold the car from backward motion on heavy grades.

The frame is pressed steel with the rear spring hangers carried well outside the line of the frame. A handsome radiator, of the square-tube cellular type, is carried in front with a stiff brass box rim securely bolted to the side members of the frame. It is provided with a filling cup of liberal dimensions. Cooling is assisted by a belt driven fan carried on a strong bearing set in the center of the nest of tubes.

A new feature of the Clément is found in the interchangeability of the inlet and exhaust valves, reducing the number of spares necessary for repairs when touring. The chain driven 27-horsepower did not arrive in time for the show, and will be described in a future issue of THE AUTOMOBILE.



DARRACQ 1904 CHASSIS WITH CONTINUOUS PRESSED STEEL FRAME.

*American Darracq Company.*—Undoubtedly the most beautifully finished exhibit ever seen in an automobile show in this country was the superb chassis of the four-cylinder 20-hp. Darracq, which was surrounded by an admiring crowd all through the week.

The frame of the machine, including the cross members which carry the engine and transmission, is made of a continuous piece of sheet steel with side members narrowed front and back for wheel clearance, and raised back of the transmission case to give ample room for the differential boxing.

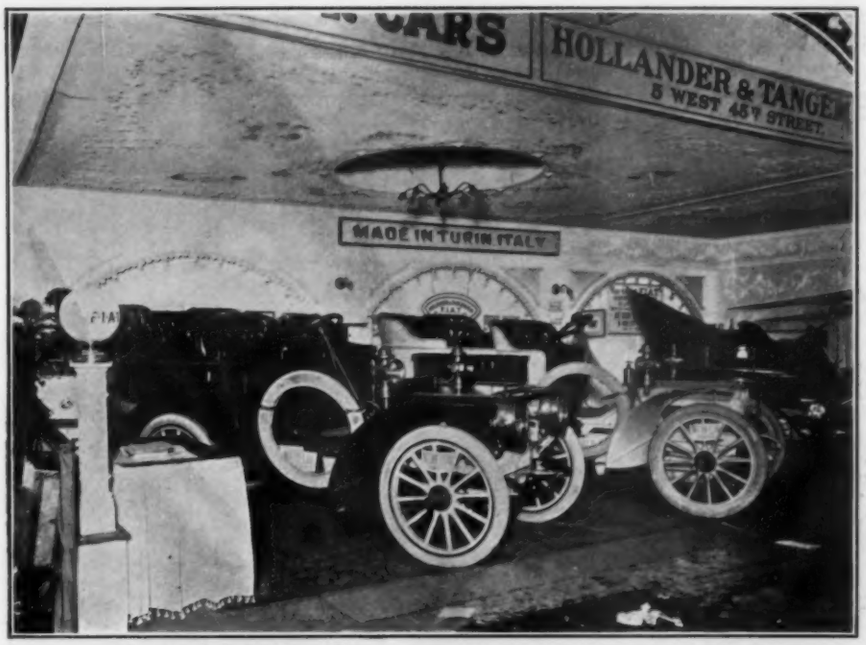
The web extending from the lower edge of the side members is perforated whereever necessary, as at the point where the flywheel needs more clearance. The number of pieces in the frame proper is reduced by this method of construction and great stiffness is secured. A point in favor of this radical departure in frame building is the considerable protection afforded the engine and its connections from road dirt without the use of removable pans or protecting aprons.

The engine has separately cast cylinders with mechanical induction valves on the same side as the exhaust, both being actuated from a single camshaft. Oleo spark plugs are located on top of the combustion chamber, over the inlet. The commutator is carried on an extension of the camshaft at the front, being outside the front cross member of the frame and below the cellular radiator The change speed provides the usual direct drive on high speed, actuated by a lever on the steering column.

The dropping of the frame from the differential forward, admits of carrying the carriage body lower than usual, the distance between the sill and the ground being but twenty-two and one-half inches.

A beautifully finished 1903 chassis of the four-cylinder 20-hp. type was shown for comparison with this year's chassis de luxe and was a convincing demonstration of the progress of the Darracq company.

Several complete cars were shown; a 30-35-hp. robin's egg blue King of Belgians tonneau by Véndrine and a landaulet of the same power and by the same body builder; and a very stylish 15-20 hp. double phaeton with rigid top and rumble seat by Kelner. The phaeton attracted much attention by reason of the unusually long wheel base, 96 inches, and the graceful lines of the body.




HANDSOMELY DECORATED F. I. A. T. BASEMENT BOOTH, BY FLASHLIGHT.

*Panhard & Levassor.*—Two of the 1904 and two of the 1903 Panhards were on view, both of this year's models being seen in the chassis, one of which, the four-cylinder 24-hp., was the exhibition chassis shown at the Paris salon. The finish leaves nothing to be desired and a number of changes are noticeable in the make-up of this classic car. The wood-armored frame has been continued and the system of drive is unchanged. The most marked departure from last year's practice is found in the cylinder construction, the engine being made up of four singly cast cylinders, each provided with a removable top plate admitting of ready examination of the water jacket for inspection, or the removal of sediment or dirt.

Mechanical induction valves are fitted, actuated from a cam shaft on the right of the engine, the low compression of the Panhard admitting of this arrangement. The circulating pump is driven by a friction wheel off the flywheel, as heretofore, but is raised to the level of the lower ends of the cylinder water jackets, a much more accessible position. High tension ignition is retained, the current being obtained from a chain-driven magneto with condenser on the dash. A new and attractive radiator with square gilled pipes of small diameter set in a brass frame of irregular hexagonal shape is used, cooling being assisted by a fan driven from a large diameter pulley on the left camshaft. The famous Krebs carbureter is used.

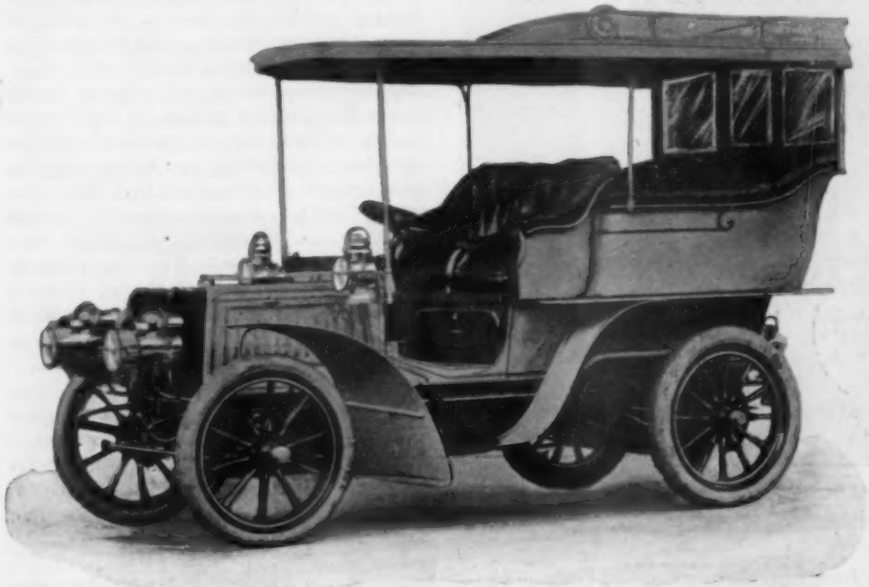
The other chassis shown was a 35-hp. of last year's model, the cylinders being cast in pairs. The finished vehicles were a 24-hp 1903 natural wood tonneau by Lebaudy and an 18-hp. 1903 model with canopy-top tonneau by Rothschild.

*The Consolidated Motor Company*—A 1904 20-25-hp. Moyea with Cole & Woop tonneau and top was shown; also a chassis of the same car. Nickel steel shafting, a foot accelerator and several other refinements are noticeable, otherwise the car is unchanged from last year's very satisfactory model.

An interesting feature of this exhibit was a commercial vehicle with double disc drive which will be illustrated and described in a future issue of THE AUTOMOBILE

# MAIN HALL and OTHER DISPLAYS.

*General Electric Company.*—A novelty in this exhibit was a mercury arc rectifier for transforming an alternating current into a direct one for charging storage batteries. This was shown for the first time and is not yet being marketed. It is especially designed for use in localities where the owner of a small electric automobile has difficulty in arranging for charging facilities or where the expense and care of a gas engine or motor-generator set is too great to be considered. By its use current can be taken from an ordinary alternating current house line to charge a runabout of 20 or 30 cells under all ordinary conditions of usage.



PANHARD CAR WITH SIDE ENTRANCE—SHOWN BY SMITH & MABLEY.

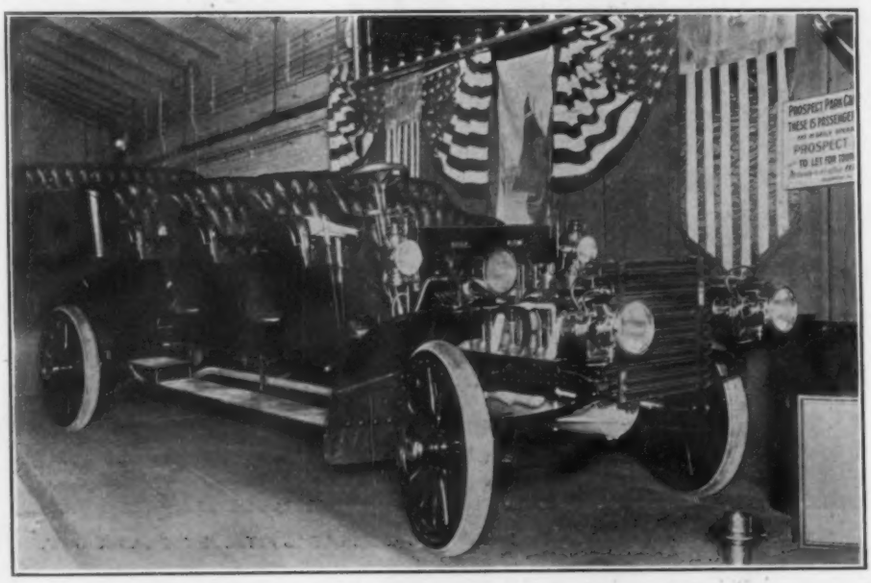
The two principal features of the rectifier outfit are, first, a vacuum tube in which the conversion takes place, and, second, a reactance, the function of which is to secure stability of operation and to give a ready means of varying the load.

The operation of the rectifier is very simple, as it is only necessary to insert the battery plug and close the line switch, the vacuum tube automatically lights, and as soon as lighted the battery begins to receive its charge, the amount of current being regulated by a dial switch on the face of the compensating reactance mounted on the top of a panel. The capacity of this rectifier is 10 amperes, this being a rate of charge at which an automobile, in case it is fully run down, may safely be left charging all night. The rectifier is simple to operate and requires no attention. If, during the time of charging, the power should go off, charging ceases, to automatically recommence as soon as the circuit becomes alive again.

Other features of the General Electric Co.'s exhibit comprised electric motors of

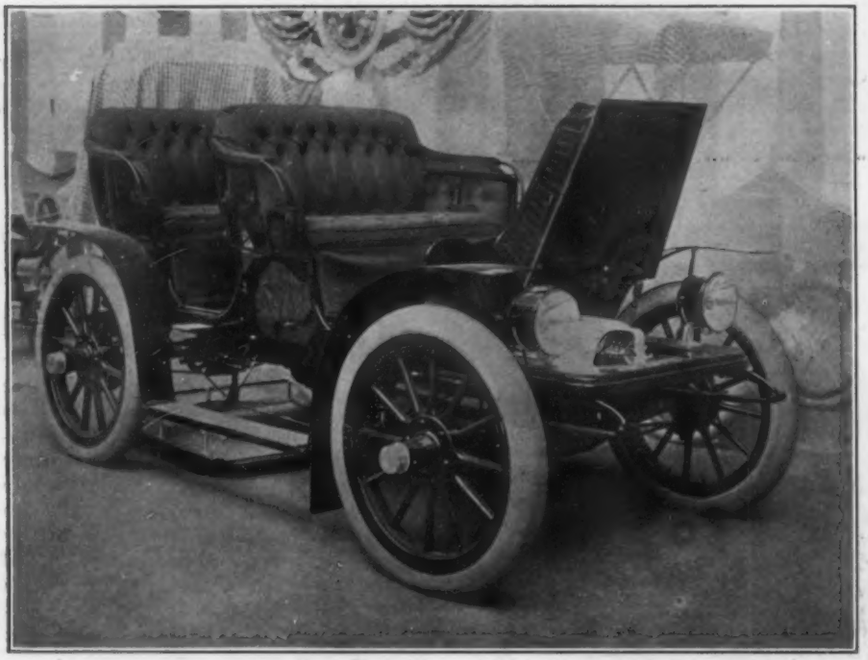
new and improved designs; a motor generator charging set; a large and small Lemp steering check; a controller for electric vehicles using one motor; a standard controller, for electric vehicles using two motor equipments; a charging panel, switchboard and a single phase rotary converter. Outside the Garden, a combination electric and gasoline tonneau touring car was shown. The gasoline engine is mounted in front and drives a dynamo which supplies current to two motors placed on the rear axle.

*Studebaker Bros. Mfg. Co.*—This old-established firm of carriage builders who entered the automobile field a year or so ago with a line of electric vehicles, showed this year for the first time the Studebaker gasoline tonneau car of 16-hp. with five-passenger tonneau body, and a bonnet front, which, however, conceals the gasoline and water tanks and not the motor. The latter, which has two horizontal opposed cylinders, each 5 by 5 1-2, is placed under the front seat. The transmission is of the planetary type, giving three speeds forward and reverse. There are double band brakes of the internal expanding type on the rear hubs, which are actuated by a pedal, with an emergency brake in connection with the change gear lever. There is an automatic governor which varies with the spark and the mixture and is controlled by a foot pedal. Lubrication is mechanical with sight feeds on the dash. Wheel steering is used, the wheel sliding forward on the post to give easier access to the front seats. The 8-hp. General touring car, the plant of which was recently purchased by the Studebaker Mfg. Co., was also shown. This machine has been brought up to date by numerous improvements, among which are the placing of the spark and the throttle levers on the steering post, a new carbureter, etc. This car has a sloping hood with the radiator hung below the frame.




MACK BROS. 15-PASSENGER MANHATTAN TONNEAU CAR.

The electric vehicles shown include a 2,500 pound delivery wagon, having 40 Exide cells, carried under the body, and two Westinghouse motors. It has a capacity of 35 miles with a full load and a speed up to 10 miles. The Studebaker runabout is shown with the regular box body and also in a divided battery pattern, the latter having a box in front which holds about one-third of the cells. One of these is shown fitted with the new Edison battery, carrying 14 cells in front and 24 in the rear. The mileage capacity is 60 to 75 miles on one charge as against 40 miles with the lead cells, but the cost is $600 additional, being $2,085.



BAKER MOTOR-FRONT ELECTRIC SURREY.

*Jones-Corbin Automobile Company.*—This firm, which has been entirely reorganized since last season, showed the chassis of a new model 16-hp. and a new 8-hp. runabout in addition to last year's model. The 16-hp. chassis comprised a pressed-steel trussed frame, carrying a two-cylinder vertical motor of the De Dion type located in front where it will be covered by a side hinged hood; transmission of the sliding gear type, giving three speeds forward and reverse, with interlocking device to prevent stripping of gears, the gear changing lever releasing the clutch before changing speed: cone clutch, double chain drive to rear wheels, double internal expanding brakes on rear wheels and foot brake on countershaft; cellular radiator; circulation by friction driven pump; mechanism enclosed by a sheet steel pan bolted to underside of frame; double ball bearings on wheels, wheel steer, with spark and gas control on steering column. This chassis will be fitted with either a runabout body with two individual front seats at $1,750 or a tonneau body at $2,000.

The mechanism of the new 8-hp. runabout is similar to that of the 16-hp. car except that the motor has but one vertical cylinder. Last year's car with 9-hp. single-cylinder De Dion motor, was also shown, with a five-passenger tonneau body with fixed canopy top and glass front.

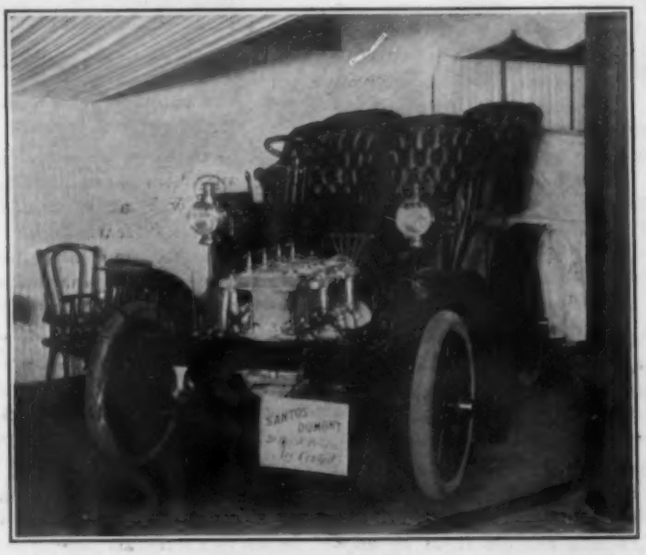
*Model Gas Engine Company.*—Two new complete vehicles were exhibited, both with double-opposed, water-cooled engines

NATIONAL DEMONSTRATION OUTFIT.

of 12 hp. and 16 hp., respectively, and an exposed mechanism, the crankcase and the gearcase tops being removed. The 16-hp. car had a five-passenger tonneau body with individual front seats, canopy top and glass front, barrel-shaped hood with honeycomb radiator; three speeds forward and two reverse with maximum speed of forty miles per hour. The wheelbase is 78 inches, tread 56 inches, weight 1,600 pounds, price $1,800. The 12-hp. car has a four-seated tonneau body, sloping front hood with underslung radiator, three speeds forward and one reverse, maximum 30 miles an hour, wheelbase 72 inches, tread 56 inches, weight 1,200 pounds, price $1,000 with tonneau or $900 with single front seat.

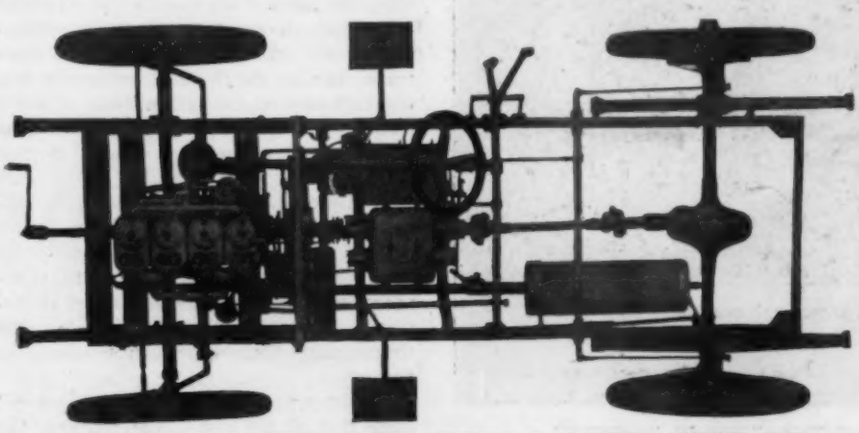
*National Motor Vehicle Company*—This company which has heretofore confined itself to electric vehicles, signalizes its entry into the gasoline field by exhibiting two tonneau body touring cars of similar design and construction, except that one is of 24 hp. and the other 40 hp. Each has four vertical cylinders individually mounted under a hood in front, those of the 24 hp. machine being 3 3-4 by 4, and of the 40-hp. car, 5 x 6. Both have mechanically operated valves, sliding gear transmission, three speeds forward and reverse, cone clutch, bevel-gear drive with telescopic shaft and cardan joints; hand-lever operated compression band brakes on both rear hubs, and foot-actuated band brake on driving shaft; jump spark ignition with both storage and dry cells; water circulation by gear-driven pump with fan; radiator and tank combined in front of hood; non-reversible wheel steer; double connecting rods to arms, front and rear of steering knuckles. The wheelbase of the 40-hp. car is 96 inches and of the 24-hp car 86 inches. The price of the larger car is $3,000 and of the 24-hp., $2,000.

Two new electric models were shown, a divided battery runabout with a folding top and wheel steer and another with a metal hood in front giving it a marked resemblance to a gasoline vehicle. There was also a diagrammatic model to show the working of an electric vehicle; a set of batteries, dynamos, controller, motor, driving axle with a wheel and steering gear, all suitably connected, which attracted considerable attention.



COLUMBUS FOUR-CYLINDER AIR-COOLED 20-HP. TONNEAU.

*Columbus Motor Vehicle Company.*—The Santos Dumont touring car, which last year was fitted with a two-cylinder air-cooled motor, was shown this year with one of 20 hp., having four cylinders each 3 7-8 x 4 1-4 air-cooled by wide flanges cast on. The cylinder tops and valve chambers being flanged as well as the sides. The total radiating surface on the four cylinders is 2,600 square inches. The cylinders are arranged longitudinally in front and a fan placed on the left side of the engine assists to cool the second, third and fourth cylinders, the first receiving ample air from the open front bonnet. The engine is enclosed by a metal hood with a perforated front. The transmission is of the spur gear type, giving three speeds forward and reverse. The gears are all loose on their shafts, with an internal expanding friction ring for each speed, all enclosed in an aluminum case and running in oil. A novel arrangement is found in the bevel gear drive from the longitudinally placed engine to the transverse change speed, the power being carried back from the transmission to a live rear axle by a chain and sprocket. Jump spark ignition, float-feed carbureter, mechanically operated force feed lubrication; roller bearings on all wheels; wheelbase 89 inches; track 56 inches, weight 1,800 pounds; price $2,000.



PLAN VIEW OF NATIONAL MOTOR VEHICLE CO.'S NEW GASOLINE CAR.

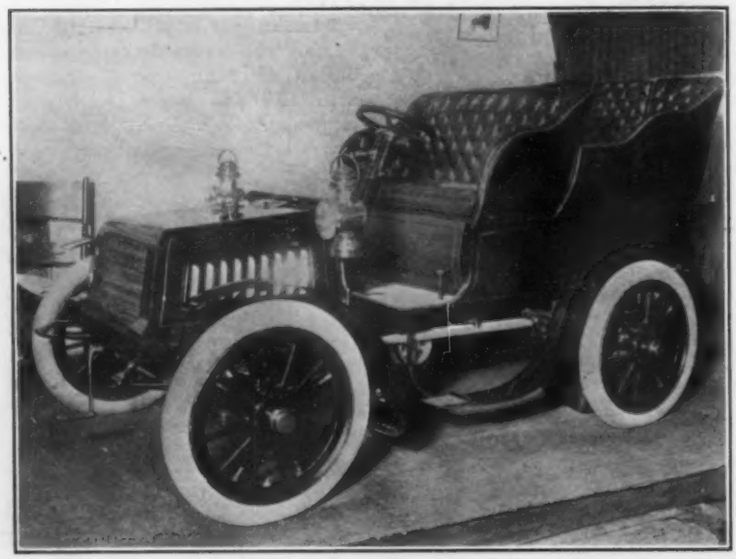
*Reid Manufacturing Company.*—The chainless Wolverine touring car was shown with double cylinder, horizontal opposed 15-hp. motor, water-cooled with disc radiator; circulation by pump, geared to engine shaft; slide gear transmission, three speeds forward and reverse; bevel-gear drive by 1 1-4 inch shaft with universal joints direct on high speed; foot-brake on main shaft and lever actuated emergency brakes of internal expansion type on both rear wheels; jump spark ignition with spark gap and coil mounted on dash; automatic float-feed carbureter; wheel steer, roller bearings on both axles. The tonneau has a raised floor, enabling occupants to look over the heads of the front

seat passengers and affording space below the floor for storage of extra tires or parcels.

*O. K. Machine Works.*—A five passenger tonneau touring car was shown, the principal constructive features of which were as follows: A Salisbury 10-hp., water-cooled motor with two vertical cylinders, each 4 1-4 x 5, placed under a hood in front; O. K. slide gear transmission, giving three speeds forward and reverse; expanding clutch; double chain drive; internal expanding rear brakes with foot brake on engine flywheel; water circulation by pump geared from camshaft; wheelbase 90 inches, track 56 inches, weight 1,600 pounds; price $1,500.

*Scoville & Peck Co.*—An interesting feature of this exhibit was the daily demonstration of the automatic dust sifting gas generator for acetylene gas lamps which was shown by a model with glass sides through which the working and results of the device could be seen in operation. This device continually separates the used from the unused carbide during generation and when the lamp is turned off the production of gas entirely ceases as there is no moist dust to act on the unused carbide still remaining in the generator, thus securing the utmost economy of operation. A complete line of gas and oil lamps in various styles and shapes was also shown.

*N. Y. and N. J. Lubricant Company.*—Non-fluid oils, "the kind which do not drip, and which remain on the bearings until consumed," were shown of various densities in glass jars, also the N. F. O. Auto Lubricant Gun, an oil syringe with a curved nose and a curved cross bar at the piston end, which enables it to be used with one hand. Ordinarily troublesome parts of an automobile are easily oiled with this device without crawling under the machine.



DAWSON 16-HP. CAR, WITH TRANSVERSE MOTOR IN FRONT.

*Morgan & Wright* exhibited for the first time the new M. & W. tire, made under the G & J patents, which has as its chief distinctive feature a wider edge for the cover and a flap of canvas which is designed to protect the inner tube from nipping.

*E. J. Willis Company.*—A wide variety of supplies and accessories was shown, including lamps, horns, jacks, brakes, tires, carbureters, masks, goggles, etc., representing a large number of makers of automobile supplies and sundries.

*The B. F. Goodrich Company.*—The standard G & J detachable tire was shown in a five-inch size for the first time, and the regular sizes heretofore made were also exhibited, mounted upon nickel-plated rims and making a very attractive showing.

*Atwood Manufacturing Company.*—A complete line of the well-known "Staylit" lamps, both for oil and for gas was shown, including a new model of the "Bullet" type with a six-inch lens mirror reflector and another called the "Mile Ahead" searchlight.

*Federal Manufacturing Company.*—A complete and up-to-date display of automobile parts was made by the Federal Manufacturing Company of Cleveland, O., during the show last week. The large number and variety of special parts, such as rear axles, front axles and frames, which obviously were made to customers' specifications, indicates that the automobile industry is endeavoring to avoid excessive plant investment which proved such a calamity to the bicycle trade in dull periods. The workmanship of the samples shown was eloquent of the character of the equipment with which it was accomplished.

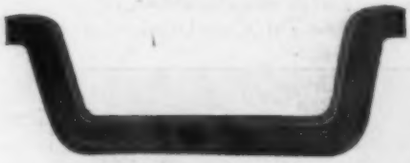
Only for electric vehicles has it been practical to produce a complete line of standard parts. The standard parts which are shown, however, confirm the reputation of the collection of automobile engineers which the Federal company has recently succeeded in attracting.

The variety and workmanship of the pressed steel frame parts shown in this exhibit amply substantiate the claims which the company makes for the thoroughness of its preliminary experiments in this branch of activity. The automobile industry certainly owes a debt to this company for the foresight and courage it displayed in enabling American car builders to overtake their European brethren in this art.

Contrary to the usual belief, all pressed steel frames are not alike; in fact, the

BUFFUM 24-HP. TOURING CAR PHOTOGRAPHED IN BASEMENT.

number of makers, even in France, who have heretofore satisfactorily produced pressed steel frames is limited. The knowledge of this prevented the Federal



FRONT CROSS BAR OF FRAME.

company from experimenting at the expense of its customers, and it completed its experiments before offering its products to the trade. One feature that excites the interest of engineers generally is the relatively small cost of conspicuous variations and specialties in frame form by means of which this company finds it hardly advisable or necessary to offer a strictly standard frame.

FEDERAL PRESSED STEEL FRAME.

This company's standard electric automobile parts for business wagons and trucks, which are offered by Hayden Eames as sales agent in conjunction with Westinghouse motive power, certainly mark an epoch in the advance of the trade and greatly increase the availability of electric power for business purposes. The exhibit of these parts indicates a strict adherence to the methods of manufacture heretofore prevailing in the horse-drawn wagon industry. The parts are evidently susceptible of a great variety of applications and arrangements.

*American Motor Company.*—The Marsh motorcycle was shown with a number of improvements, chiefly in the carbureter and the muffler, the latter is said to almost completely silence the exhaust. A tandem attachment which may also be used as a stand was shown attached to a standard Marsh motorcycle.

*Arthur R. Mosler.*—In addition to the well-known "Spitfire" spark plugs, a multiple commutator for use with one, two, three or four cylinder engines was shown; also a spark plug with a protector and spark gap combined.

*Wm. Corlss & Co.*—A new flat-tread tire, containing two air tubes protected by thin tempered steel strips, which is claimed to be both resilient and puncture proof, was shown.

*Wm. Cramp & Sons Ship and Engine Building Co.*—Transmission cases and other automobile castings were shown in Parsons manganese bronze, of which this company is sole maker for the United States.

*Baker & Co. (Incorporated)*—Hard platinum rivets, sparking points for tipping electrodes and vibrator springs, ignition tubes and platinum in wire and sheet forms were shown.

*The National Carbon Company* exhibited dry cells, both singly and in batteries, and jump spark coils. Tubular dry cells for motor bicycles were also shown.

*Meyrowitz Manufacturing Company.*—Masks and goggles for automobilists were shown in great variety, a number of exclusive Meyrowitz designs attracting marked attention.

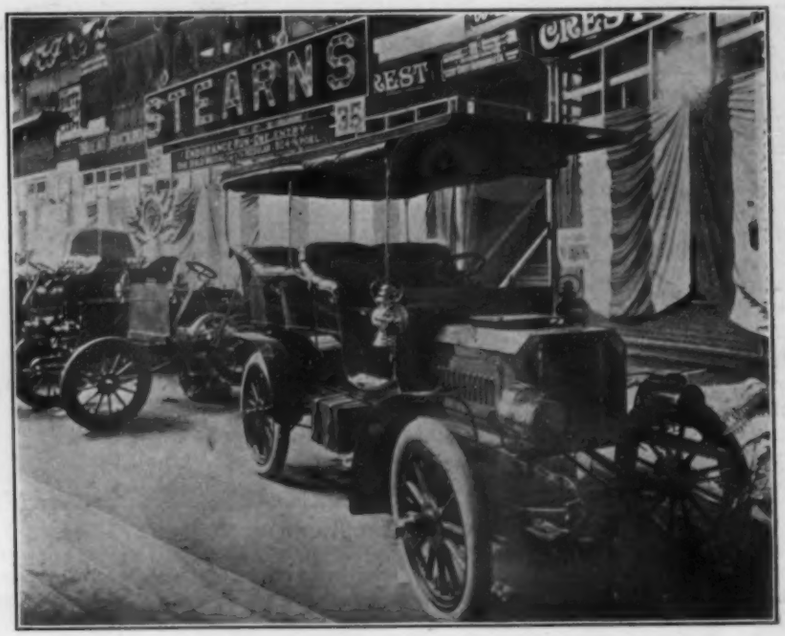
*United Electrical Manufacturing Company.*—The Crescent dry batteries, jump spark, voltmeters and ammeters were exhibited.

*Gould Manufacturing Company.*—The Gould spark plug and the Gould carbureter were shown.

*The Climax Ignitor Company.*—The Climax igniter which has no induction coil or spark coil, but is wired direct from the battery or dynamo was shown.

*Polyphase Ignition System Co.*—An alternating current generator for explosion engines was shown. The magneto is so wound that two alternating currents differing in phase from each other by 90 degrees are delivered to a double sparker of the make-and-break type so constructed that both circuits are simultaneously interrupted by the action of the camshaft. As the currents differ in phase by 90 degrees, the interruption causes a spark at whatever time it takes place irrespective of the variations which limit the effectiveness of the single phase current. For a jump-spark system the circuits are led to a special induction coil with two primaries. The claim is made that the polyphase magneto may be driven at any speed, irrespective of the motor speed, with equally certain results.

*J. B. Colt Co.*—The well-known Colt acetylene generating apparatus was shown in action; also a very complete line of automobile self-contained and generator-fed lamps. A feature of the Colt system is the hermetically sealed carbide cartridge, which may be quickly inserted in the generator, to be thrown away when exhausted, thus avoiding the necessity of cleaning the carbide chamber after the usual method. A container is supplied with the lamps so




STEARNS TONNEAU AND CHASSIS OF AMERICAN TYPE.

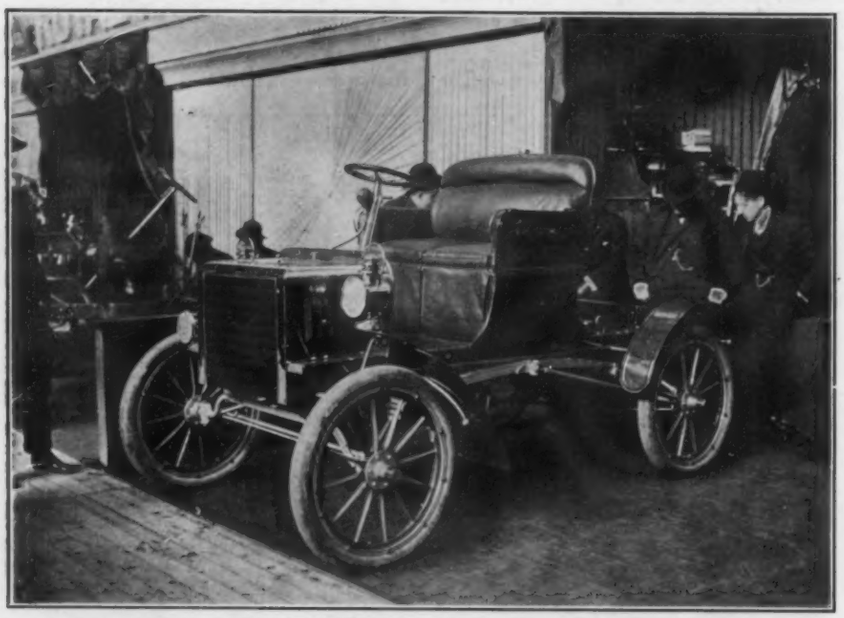
that carbide charges of the usual kind may be used.

*Wheelock Motor Car Clock Co.*—Automobile clocks were shown for use on the dash of cars. The movement used is a first-class guaranteed clock mounted in a burnished yellow brass case with plate to affix to the dash with four wood screws or through bolts and nuts. The clock is guaranteed for one year and is thoroughly water and dust proof.

*The Fairbanks Co*—The Goodson igniter and spark plug were on view at this stand. The igniter is a generator of the magneto type with a spring impelling device connected to a crank on the armature to cause rotation of the armature within the magnetic field for a portion of a revolution at a speed independent of the engine speeds sufficient to generate the required current to produce a good spark.

The igniter is connected directly to the engine shaft, either by sprocket wheel or by a gear, and is so arranged that as the shaft turns it puts the spring impelling device under tension, and is so timed with reference to the position of the piston that the spring impelling device is tripped into action at the proper time, giving the armature a quick impulse and producing the spark. Briefly speaking, this igniting device is a simple alternating magneto, strongly built, and provided with a little spring attached to a crank on its armature shaft which is put under tension and tripped into action by the engine, rotating the armature within the magnetic field, producing a single electric impulse and at the proper time to produce the spark, and is capable of being rocked on its base to change the time of ignition at will.

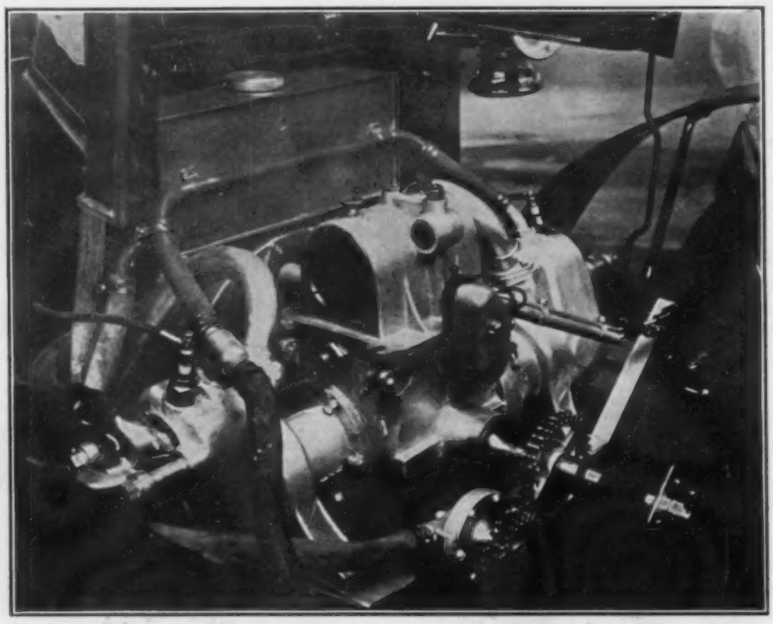
The Goodson magnetic spark plug consists of an ordinary electro-magnet in combination with a pair of electrodes inserted in an iron body which screws into the explosion chamber of the motor. One of the electrodes is movable and has an armature attached to its upper end opposite to the cores of the magnet. Energizing the electro-magnet causes the movable electrode to separate from the stationary one, breaking the circuit and producing a spark. The electrodes are closed by a spring, when the device is ready for another impulse of the current.



BUCKMOBILE BUCKBOARD, WITH STEEL AND WOOD SIDE SPRINGS.

*Wm. Hiorth & Co.*—Several types of wrenches were shown by this concern, one, a combination wrench and plier, attracting much attention. The tool is a convenient accessory and is so designed that the jaws may be used for pipes or nuts with equal facility. It is made in four sizes, from six to twelve inches, handling 1-8 to 1-inch pipe. A quick adjusting pipe wrench for heavier work was also shown.

*Vacuum Oil Co.*—Lubricating oils of various grades and densities formed the exhibit of this concern. The well-known brand, Mobiloil, was shown in several grades, each well adapted for the machines for which it is recommended.



AUTO-CAR ENGINE WITH OILER BOLTED TO CRANK CASE.

*D McRae Livingston.*—The Arctic cellular radiator formed the subject of this exhibit. It is a conventional looking cooler of the Mercedes type, but with marked differences in construction, the cooling being accomplished by the use of flat vertical tubes which are formed with small square bends from the top water chamber to the bottom. The cooler contains 55 thin copper tubes, 4 inches wide by 14 1-2 inches high, with 78 square feet of radiating surface, the space occupied by the tubes being only 14 1-2 x 21 inches square.

---

Canopy tops on the Packard and Model cars at the Madison Square Show were made by the Sprague Umbrella Company of Norwalk, Ohio, of which Colonel Sprague is the president. This concern has developed the automobile side of the business and employs a force of about 300 men in its shops. The general appearance and style of these canopies was very favorably commented upon by the trade.

A slight loss by fire was suffered by the Shelby Steel Tube Co. at Shelby, Ohio, a small building being somewhat damaged. The newspaper accounts of the fire were grossly exaggerated and the small loss will in no way interfere with prompt deliveries of the company's product.

# Interesting and Novel Features of Car Construction at the Madison Square Show.

BY H. L. TOWLE.

There would seem to be a good deal still to be done in the way of working out a thoroughly satisfactory operating device for the spark and throttle of wheel-steered gasoline machines, if one may judge from the diversity to be found in this feature at the Madison Square show. A year or two ago it looked as if the Mercedes device, of two arms working over saw-tooth sectors on the steering wheel, was destined to win out. This year it is found in a good many cars, but in others attempts of various sorts have been made to improve on it.

### Columbia Control.

The new Columbia touring car has a control similar to the Panhard, which was described in these pages some weeks ago. It consists of a pair of supplementary spokes in the steering wheel, on which twin sleeves acting through wire cables control the spark and throttle. Rotated by hand in one direction, they advance the spark or open the throttle, and are held when thus rotated by a ratchet and spring device against the tension of springs tending to return them to the slow speed position. A shift of either sleeve of about 1-8 inch along the spoke releases the ratchet. For the spark control this has the disadvantage of giving no visible indication of the degree of advance, and for this reason the regular arm-and-sector device will be substituted when preferred. For starting after a short stop a small lever on the dash may be shifted to "throw" the spark and ignite without cranking.

### Rambler and Toledo Features.

The Rambler has a brass wheel, nearly as large as the steering wheel and pivoted just below the latter on the steering column. The axis of the pivot lies fore and aft, so that the wheel rocks from side to side. This motion is made to operate the throttle.

The Toledo has its steering wheel rim pivoted on two of its three spokes and latched to the third, allowing the rim to be tilted to facilitate ingress or exit.

The compression of the Toledo motor is extremely high, 120 pounds being the figure named by one of the company's representatives.

### Ideas in Lubrication.

In the present show a very imperfect canvass disclosed two concerns, the Franklin and the Pierce, whose designers have omitted the usual oil holes or grooves in the top brasses of crank pin bearings.

In the Arrow motors the oil is conducted by holes drilled in the crank cheeks to the center of the crankpin, from which it escapes by centrifugal force to the surface of the pin through a suitably drilled hole. There are no oil grooves near the middle of the brasses, but the working surfaces are relieved a little at the edges where they come together, at which points, there being little or no pressure, the oil can enter freely, to be then drawn around by the pin's rotation. For some reason this system is not used in the single cylinder stanhope motor made by this company. In the Franklin motor was found an arrangement which could hardly be otherwise than satisfactory. The top brasses were perfectly smooth, but the bottom caps were drilled with several oil holes which were carried right through the brass, allowing oil to be caught by the dashing of the rod end in the oil bath in the crank-casing.

KIRK MFG. CO.'S NEW YALE TONNEAU WITH CANOPY TOP.

### One-Piece Frame.

One of the most interesting things at the show, technically speaking, was the one-piece pressed-steel frame of the 1904 Darracq exhibition chassis. This frame had its channel side members, three cross members, and a sort of pan, integral with the side members and taking the place of the false frame as a motor and change speed gear support, all apparently formed in one piece This beautiful chassis contained a number of features both novel and attractive, one of which was that both the pedal and hub brake drums were wholly enclosed, to protect the expanding rings inside.

### Contact-Spark Ignition.

Contact spark ignition was found in several of the foreign machines, led by the Mercedes. This system, which has been dropped by nearly all American makers, seems to be going through a period of testing abroad, and time will have to determine whether it or the jump-spark will in the end prevail. Most of the European makers have refined, or at least lightened, the parts considerably beyond American practice; whether with gain or loss in reliability may be questioned. Apparently few of the followers of the Mercedes are under the same compulsion to use the contact spark as exists in that machine, with its pressure-fed and sight-feed-regulated oiling system.

### Various Oiling Devices.

In an increasing number of machines the shaft bearings of the change speed are lubricated separately from the interior splash. Of these the Peerless, Berg, and

EXHIBIT OF OLDS MOTOR WORKS, TOURING RUNABOUT IN FOREGROUND.

Rochet-Schneider may be noted, the last of which, however, oils only the bearings of the upper or secondary shaft in this manner. The Peerless uses oil pockets and rings, and the other two have pressure feed oil pipes from the mechanical oiler. Machines which oil the gear shaft bearings from the interior of the case usually have the bottom of the case deep enough to permit the metal grit in the oil to settle, or use wire gauze strainers over the oil pockets above the bearings; or, as in the case of the Locomobile, depend on a special hardening treatment applied to the ends of the gear shafts, together with renewal of the oil at regular intervals.

### Novelties in Brakes.

The principal novelty in the way of brakes was seen in the Rochet-Schneider which had two separate brake drums on the cross shaft, each with outside double-acting brake jaws. Instead of two pedals, there are three, of which the outermost releases the clutch and applies both counter-shaft brakes. The second pedal releases the clutch and applies only one of the brakes; and the left-hand pedal, as usual, releases the engine. Water is fed to the interior of both of these brake drums from a tank on the dash, holding about two quarts. The rear brakes are of the external type and are single-acting. They are equalized by short compression springs in the tension rods. This machine has contact spark igniters in the cylinder heads, worked by snap cams and variably timed by a wedge arrangement on the cylinders, which moves the igniter rods up or down in relation to the snap cams.

### Air-cooled Motors.

As a result of the conspicuous success of the Franklin and Knox machines, air-cooled motor stock is rapidly going up The Franklin company has boldly launched a touring car with a four-cylinder vertical motor. The cylinders are arranged fore and aft, with a fan in front to help the cooling. For radiation, wide and thin flat copper rings are forced on the cylinders about one-quarter inch apart. If the large motor of the Franklin company is anywhere near as successful as the small one, it will have a big field.

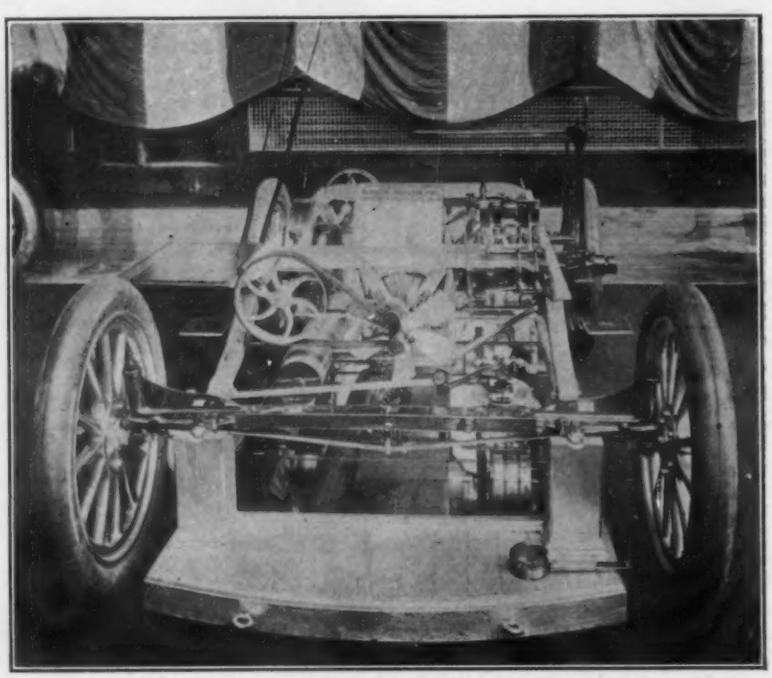
A quaint but apparently promising idea in air cooling is found in the Cameron car, a new candidate for favor, with single cylinder motor in front, two-speed sliding gears, and bevel gear drive. The exhaust, after passing through the muffler under the body, is piped back again to the motor, and discharged upon the cylinder head through a nozzle arranged to draw fresh air along with the now cold exhaust gases. If properly worked out, the idea should be a good one.

### Electric Truck Design.

A 5-ton electric truck shown by the Gibbs Engineering Company had a pair of 2 1-2 k. w. motors hung from the main frame back of the rear axle. The shafts of these motors carry spur pinions engaging large gears loose on a fixed shaft hung from the frame in brackets. Sprocket pinions affixed to these gears drive the rear wheels through chains, and distance rods preserve the alignment between the fixed shaft and the rear axle, on which the main frame is supported by semi-elliptic springs. A novelty in this truck is a "composite" tire, steel with a central groove in which is fixed a solid rubber ring of about one-third the total tire width. The steel is supposed to carry the weight and the rubber, which projects a little above the steel, to give traction.

### Packard Construction.

An unusual number of novelties were to be seen in the Packard "Voiture Légere." This machine has nearly the same characteristics as the phenomenal "Gray Wolf," but a smaller engine and three gear changes instead of two. The change gears are included in one axle case with the differential, the principle being similar to that of the Henriod *Universel*, described in these pages last year. The drive is direct on the high gear, and both axle and gear shafts run in ball bearings. From the clutch to the gear box is nothing but the universally-jointed propeller shaft. The pedal brake, instead of acting on the



CHASSIS OF KNOX CAR, MOUNTED OVER MIRROR.

primary gear shaft, acts on the rear wheels direct. These carry enclosed drums inside of which expanding rings are operated by the pedal, while friction bands are applied to the outside of the same drums by the emergency lever. The forces tending, when braking, to rotate the axle casing forward, and when driving to rotate it backward, are taken off the side springs by a tube secured in the case and extending forward to a bracket depending from one of the cross frame members. Short compression springs above and below the end of this tube cushion it and prevent rattling. Contrary to usual practice, applying the service brakes does not release the clutch.

The engine has four-cylinders of 3 7-8 inches bore, by 5 1-8 stroke, with the inlet and exhaust valves side by side and operated by the same camshaft.

### The Walter Motor.

A decidedly interesting motor is that in the Walter car, whose valves open directly into the cylinder head and are duplicates in all respects, both being worked by cams on separate shafts, one on each side of the engine. If there is anything in the general belief that this is the most efficient type of cylinder head design, this motor should give results equal to the best. Governing is effected in this motor, not by a throttle valve, but by stepping the inlet valve cams and shifting them under the valve rollers, thus varying the lift. The carbureter suggests the box-like design of the Mercedes, but the dilution inlet is not varied to suit the motor speed, it being claimed that one adjustment, when properly made, is efficient for all conditions.

An unusual feature of the Walter machine is the use of a helical spring in the propeller shaft to cushion the sudden strain due to the clutch taking hold.

The show presents many commendable features of novelty and merit and may be taken as an earnest of the painstaking efforts of the American manufacturers of automobiles to produce the best mechanically propelled vehicles in the world. Improvement is noticeable not only in design, but in finish as well, and the result of the progress of the past year will be surely found in increased efficiency of the makers' product of 1904.

# Show Hints for Intending Buyers.—I.

BY RENE M. PETARD.

Now that the New York show is closed every one interested who has been able to attend or to read the extensive published technical descriptions of the show novelties is fairly well posted on the state of progress in which automobile construction is at present, and many intending buyers are about to fix their choice upon the car which they believe best suits their requirements. For the benefit of such persons, primarily, the writer will discuss many of the vital parts of a car, the principles of which do not vary, no matter what the details of construction may be. This fact is often overlooked by the buyer, who frequently pays more attention to mere "fashion details" than to the fundamental principles embodied in the construction of the car.

Some of the points to be covered do not apply to the light and inexpensive runabout, for of course it is not possible for a manufacturer to place on the market a car embodying all the modern improvements and refinements at the low price at which a good serviceable runabout can be purchased. It has, however, frequently happened in the case of some improvement which originated as a matter of fashion, that, after it had been thoroughly tried out in the expensive cars, it became a standard of design.

Believing that the best mode of treatment of the subject will be to take up the various essentials of construction in detail, the writer will discuss each in turn.

### Ignition Systems.

One of the most perplexing questions for the buyer of a car is that of ignition. The manufacturers offer him jump spark, make-and-break, sometimes both, and of course claim that the system which they use is the best. Both systems have their respective advantages and disadvantages. It seems to me, however, that for a light and inexpensive car where all the power of the small motor has to be concentrated on the wheels, and where simplicity of mechanism is the main point, the jump spark is the best ignition to be used. It requires more attention than the make-and-break by magneto, as the cells or batteries have to be watched carefully; but it is generally easier understood than the make-and-break. There is no doubt that the make-and-break by magneto is better fitted for heavy cars, where complication is of little importance and where certainty of action is secured by careful workmanship. A well designed make-and-break will work as well, if not better, than a jump spark, provided that it is perfectly constructed, and such perfection is not to be expected in low-priced cars. I will, however, call attention to a system of make-and-break to be found on an American car, low priced when its mechanical value is taken in account—I mean the Duryea car.

The exhaust valve *V*, in Fig. 1, carries at the bottom of its stem *S* a projecting piece *T* securely fastened. Besides keeping the valve *V* on its seat in the usual way, the exhaust valve spring acts as a torsion spring and keeps *T* resting continually on a flat, oblong piece *D* resting in its turn on a special cam. When the time for igniting the charge has come the cam slightly raises *D*, this causes a rotation of the valve *V* on its seat and also causes a projecting electrode *E*, forged with the valve, to come in contact with an insulated electrode *Ie* and to leave it when the cam has turned a fraction of a revolution, thus causing a spark. The piece *D* rotates around one of its sides as shown in the sketch by the bearings *BB*. I wanted to explain this device incidentally, as it shows how ingenuity from the part of the engineer will sometimes allow the simplification of rather intricate devices, thus permitting their use on low cost machines.

When jump spark ignition is used on the machine chosen, the buyer should see that his coil or coils and batteries are of the best makes on the market, as upon that point will depend to a great extent his security against occasional breakdowns. It is well to remember that when the coil or the battery supplied with the machine is not "as good as money can buy," it should be at once replaced by a better one. Every man who follows this advice will find that, in comparison with his less careful fellow drivers, his outlay will have been amply made up by the scarcity of his troubles and his increased pleasure.

### Make-and-Break By Magneto.

When make-and-break by magneto is used, the magneto should be placed in as handy a position as is possible and the drive should be carefully examined. Chain or gear-drive with a regulator of speed are no doubt the best drives for any rotative magneto, as they are least subject to wear and are not of a much greater cost than friction or belt drive. In case

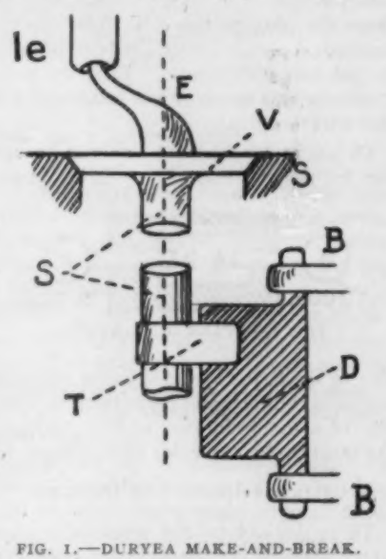



FIG. 1.—DURYEA MAKE-AND-BREAK.

of an oscillating magneto, provisions for the lubrication of the levers and spring-fastenings should be made, as trouble in that part of the magneto is about the worst that can be experienced in ordinary use.

Considering details which increase the

security and ease of operation of an electrical ignition apparatus we come to improvements generally of detail but well appreciated after a short while; which improvements ought to be found on almost all cars.

One of the greatest causes of trouble with the ignition apparatus has always been the disconnecting of the wires under the steady vibration of the motor. To avoid this trouble as much as possible, wire terminals have been used instead of the old process of twisting the wire around the screw and tightening a nut over it as hard as possible. The simplest and best of these devices appears to be the one shown in the sketch herewith, which

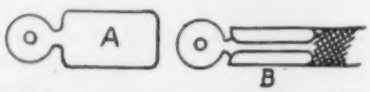



FIG. 2.—SIMPLE WIRE TERMINAL.

explains itself. (See Fig. 2). These wire terminals are stamped out of sheet copper in the shape shown in *A* and for use are bent and soldered to the end of the cable as shown in *B*. This is a very neat and inexpensive device which should be almost universally used. Another type of wire terminal is the one used on the Locomobile cars. It consists of a chain as connection betwen the cable and plug and is absolutely unaffected by any amount of vibration.

An appliance which has been found to help greatly in the production of a good spark in the jump spark system is the small apparatus known as the spark gap, shown in Fig. 3. It consists essentially of two points *A* and *B*, held apart in a piece of insulating substance, *P*, and interposed in the way of the wire going from the plug to the coil. The distance between *A* and *B* can generally be adjusted to get the best results. In quite a few instances this spark gap is combined with the wire terminal.

Of late many devices have been brought out for the purpose of permitting inspec-

FIG. 3.—SPARK GAP DEVICE.

tion of the spark in the cylinder while the engine is running, and permitting incidentally of a determination of the quality of the mixture by the color of the flame.

### Cylinder Inspection Devices.

These devices consist essentially of an elbow screwed on the cylinder instead of the spark plug. In Fig. 4 one branch *B* of this elbow is formed by the plug *P*, the other one consisting of a simple tube *T*, in which is set a very thick glass or lens, allowing to see and study the spark *s* from the outside. It is claimed for this apparatus that besides allowing a positive study of the spark it forms a chamber *C* in front of the plug and prevents sooting.

On some large French and American cars a device is fastened to the dashboard, allowing to start the motor automatically as long as a charge is contained in any one of the cylinders and also allowing to find out in which cylinder the trouble resides when the ignition does not work satisfactorily. Such devices have already been described at length in this paper. I will, however, recall that they simply consist of a knob connected with each cylinder independently of its own connection on the contact breaker, and that a sliding stem equally connected with the coils, allows of a spark being produced in any of the cylinders at the driver's will at any portion of the stroke, thus allowing inflammation of the charge contained in any of the cylinders.

### Prevents Back Firing.

A device extensively found in this year's machines, and which should always be requested by the buyer, is a device preventing back firing when starting the engine; that is, making it impossible for the explosion to take place before the moment when the piston has reached the top of the compression stroke, thus avoiding the

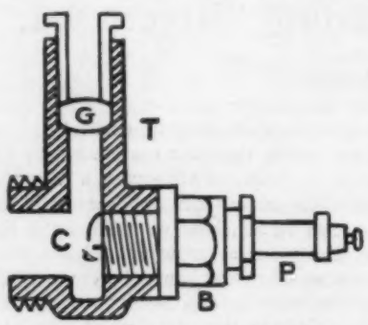



FIG. 4.—SPARK POINT WINDOWS.

very dangerous and formerly very frequent accidents caused by sudden backing of the motor.

A clever device of this kind is to be found on the Cadillac car and will certainly be greatly appreciated by the public. A very simple solution of this problem has been applied in France for the past four years on the Gillet-Forest cars, it consists simply in disposing the ratchet upon which the starting crank acts in such a way that meshing of the crank is impossible unless the contact breaker is first brought to late igniting position. This is made possible by the fact that the starting crank acts on the secondary shaft upon which the ignition cam is mounted.

These are a few of the features which ought to be found in a perfectly safe system of ignition. There are many others, but as they are generally to be found on only one make of car whose property they are by patent, they do not come within the scope of this article.

### Systems of Lubrication

After the question of ignition the question of lubrication is one of the greatest importance for the satisfactory working of the motor. Upon it depends to a great extent the efficiency and also the long life of the engine.

There are several principles of lubrication, any of which can be found on all types of cars.

The latest and most approved is the forced lubrication by automatic pump. This device is undoubtedly the best and should be requested wherever possible, as it does not require from the driver any other attention than the filling of the oil tank. It is always in action as soon as the motor starts, and stops with it, so that it is also the most economical system. In some cars the feed of oil is made by gravity. This should be relied upon only when it is impossible to use any mechanical means, as the usually great consistency of the lubricating oils does not allow a very easy flow of oil, and, besides, the feed of oil is never constant as it is continually affected by the vibration of the motor and the shocks of the road.

A system of lubrication which is still very extensively used and which can be recommended with all security is the splash system. It has the advantage of requiring the intervention of no mechanical agent except the parts of the motor themselves, and has proved highly satisfactory on all types of motors. However, when very long bearings are used it is wise to add to the regular splash system the chain or ring oiling; both too well known to require special description.

A lubricant which seems to be forgotten by a great number of the manufacturers and which does not deserve such neglect is the mixture of graphite and heavy mineral grease formerly used to so great an extent in transmission boxes and differential gears. It is one of the best lubricants to be found, inasmuch as it does not practically require any care, and lasts much longer than oil. The initial cost is higher than that of oil, but if it is considered that a gear case, for instance, well packed with this lubricant will practically not require any attention for a good part of the season, it will be readily seen that graphite and grease come out cheaper in the long run.

While on the subject of lubrication, I will call attention to a contrivance very largely used by French tourists and which, although it does not belong to the standard equipment of any car, deserves attention and should appeal to all careful owners.

It consists in surrounding all the joints of any importance, such as the steering levers and rods joints, the brake rods joints, etc., with a small leather bag filled with hard grease. Such an appliance will in no way impair the easy working of the joints and besides will add security, to better lubrication, as in case a nut would jar loose in such a joint, the bolt would still be held in place by the bag. When neatly made they are not at all unsightly.

# Show Tendencies in Construction.

BY HUGH DOLNAR.

Nobody saw the show. The average daily attendance was 12,000 or so, every one of them, so far as observed and certainly almost all of them, having two good eyes and the whole 84,000 good long days of steady looking at things in the Garden from 10 in the morning to 11 at night—say a grand total of 672,000 hours of observation, allowing each spectator eight hours per day of inspection—and yet is is quite certain that no one saw all the things of real interest and significance on view at this first real Automobile Show of real American vehicles made by really competent American builders.

There were three classes of observers at the Garden—the exhibitors, the writers and the spectators at large; and some of the spectators were experts who carried neither notebook, pencil nor camera, and were busy every minute in storing their memories with observations of especial lines of details of individual interest.

None of these saw the show.

As to the exhibitors, one of them said, Saturday afternoon, late on the closing day, as he sat leaning wearily forward in a chair in his own space, "Yes, I am glad it is almost done. Such hard work, so much talk, talk, talk, the same things over and over and over again ten or twelve hours a day and no time to eat. I did want to take one walk through the place and have a look at what there is here, but it has been a steady drive and crush every instant right here, always some one waiting to talk to me, and all I have seen is what is on the two sides of the shortest way from my own space to the entrance, and that is all I shall see. As for knowing what other folks are showing I might better have stayed at home, for there I could have read the papers, and I haven't had time to even look at them."

As with one, so with all, and none of the exhibitors saw much of what they wanted to see, save purchasers, of whom they saw plenty, and as they wanted to see them most of all we cannot find much pity for the overworked exhibitors, tired though they were, and glad when the end came.

What the show was, and what it meant and foretold, must be gathered from the hundreds of printed pages evoked by it, partial stories, bits picked out here and there by observers who followed narrow paths in single directions, and studied small classes of details only, and so really obtained a passably complete grasp of a single thread of the tapestry of mechanical traction advance, or saw and carefully traced one twining curve in the bewildering complications of this brilliant mosaic of motor wagon design and achievement.

First of all, to the trained eye of the experienced shop-man, was the hitherto unapproached excellence of the machine work. Not fineness of polish and abundance of glittering and tawdry nickel plating—of that there is always enough and to spare in the creations of the novice and the incompetent experimenter, but sound, honest finish applied to brilliant conceptions carefully worked out in simple and satisfying combinations, and shown in convincing constructions which carried their own commendation written broad across them. Good work was everywhere in sight, good ideas well carried out, good thought in invention, good study on the drawing board, good smithing at the forge, superb examples of the founder's subtle art, and excellent machining, supplemented by accurate surfacing in the grinding machine, the best American machine shop practice, which is not excelled anywhere. This met the trained eye of the shop-man in all directions, abundantly displayed, and told that the machine and the maker of the machine as well, had been found together at the 1904 Garden show.

As to types of wagons, Stanley of Newton, Massachusetts, first of the steam wagon makers, who is now just completing his new steam wagon factory in that suburb of Boston, said to me almost with his first words, "The steam wagon seems to be out of it." Later, "How is it that I am selling more wagons in Boston and vicinity than I can build, and yet from this show the steam wagon has no standing at all?"

John Grant, talking for White, said, "Why do you say the steam boiler has no place in a touring car? We have absolutely no trouble with the boiler, nor with the water, nor with the water supply, nor with the open fire.

"With the White boiler and condenser we have no trouble about water, and the steam wagon, is quiet, clean, powerful and certain and elegant in action, and all right in every way." W. I. Twombly said late in the closing day, "Going out? Not this year any way; I have written orders for all I can build of my large touring car. You are wrong if you think the steam wagon has gone, or is going. The steam wagon will stay, you may be sure of that. Nothing else will do so well for all round work, and the public will find it out. This is the high-water mark for the cylinder-fired motor; from this on the steam wagon will begin to come back again, instead of going out."

Yet there were only three or four makes of steam wagons, all told, at the show. White can build about three big wagons a day, and Stanley can build about three little wagons a day. I don't know Twombly's capacity. The Geneva works can put out possibly three touring cars a week, and there are a number of steam trucks building, including one driven by the De La Val turbine.

THE 1904 WHITE STEAM TONNEAU WITH CANOPY TOP.

Twombly uses single acting steam cylinders, quite on gas engine lines, and there was a three-cylinder steam engine shown, reversing, with a cam valve action, single acting cylinders, all very much in the gas-engine manner save the reversing.

The deadly foe of the steam engine is cylinder condensation, and while the steam in the cylinder must vary in temperature as much as possible during the working stroke to obtain the best results, the cylinder itself must change in temperature as little as possible, and must always be as hot as it can be. The gas engine cylinder and piston, on the contrary, must be kept cool and the thin trunk piston, of cast iron only about 1-8-inch thick, single acting and open to the air at

DISPLAY OF LOCOMOBILE CARS ON THE MAIN FLOOR.

its open end, is certainly an efficient cooling agent, and therefore seems on the face of things to be unsuitable for the steam engine, which wants a hot cylinder and piston. Yet the two steam novelties at the show of which the Twombly was most observed (the other example being a small three-cylinder motor only, inconspicuous in appearance, though a fine piece of designing and construction), both had trunk pistons, single acting, on gas engine lines.

The heavy steam truck, so much in favor in England, was not shown at all, so far as I saw. In its place we had the heavy electric truck, of which one brewery alone has over forty in use, if memory serves me correctly, and the Adams Express Company, which has for some years maintained an "engineering" department, supposed to be engaged in producing the steam truck of the future, is actually using about forty large electric trucks, and now has no steam vehicle at all in service.

The original Benz of Manhiem was of what may be termed the "built-in" construction. The motor and gearing occupied the whole interior of the car, the wagon body supporting the machinery, and the wagon body could not be removed without a considerable time and labor expenditure, and the motor was not accessible. The whole of this "built-in" construction was open to valid objections of the most serious character. But, with all its faults, of arrangement, the Benz wagon could do rather more on the road than any other wagon of its day, and it was inevitable that its lines should be followed by the early experiments in that revival of the 1820-1834 efforts to produce motor vehicles which occurred in 1890, and found its first public American manifestation in the *Times-Herald* 1895 event. All the wagons entered in this first American automobile exhibit were of the "built-in" type, and Duryea won the run because the Benz wagon leather transmission belts ran on top of each other instead of working harmoniously side by side on their pulleys. Two exhibits in 1904 were yet "built-in" vehicles, having their motors and gearing inside the wagon body and fastened to the body so as to be difficult of observation and access, and in many ways open to criticism.

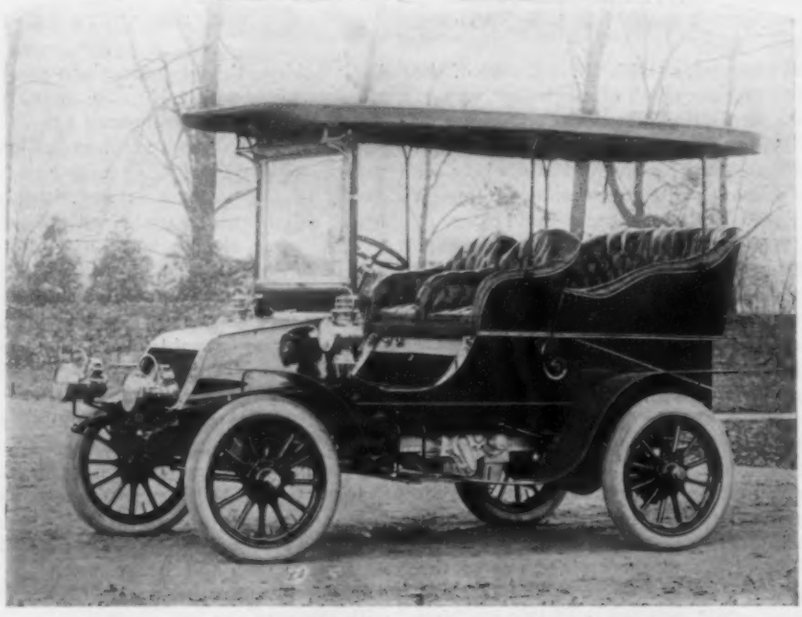
It must be regarded as very highly probable that the built-in car will disappear. There are so many advantages connected with placing the motor where it can be fully disclosed by lifting up a hood, (this hood either disconnected, hinged or linked to swing upward or outward or inward, all these hood-forms and attachment and handling methods being shown), that the purchasers will soon demand perfect and instant accessibility to the machinery of the car. And this means that everything —levers and all—shall be attached to the chassis frame, and that the body shall be absolutely empty, containing no tanks nor piping, and supporting no levers whatever.

There are only a few cars, as yet, which leave the body of the wagon to be occupied by the passengers and their belongings only, and many cars which leave the whole interior of the body clear of machinery yet fasten levers and rods to the outside of the body.

It is inevitable that every trace of the practice of both Benz and Daimler must disappear completely, as the once satisfactory hot tube ignition and leather belt transmission have disappeared, and that no wood will be used below the body except for artillery wheel spokes and the driver's foot-board, and even in these places, now so generally filled by forest growth, sheet-steel may be the generally adopted material, in the form of pressed wheels and a pressed steel foot-board with pressed steel removable panels perhaps, though there seems to be no real need for disturbing any part of the foot-board, so that a single piece of pressed steel, flanged and formed with lugs to take levers, might well complete the all-metal chassis, of which there is as yet no example, so far as I am aware.

---

It is understood that the prices for 1904, which will be announced February 1 by the United States Rubber Co., will represent a substantial advance Crude rubber is quoted fifteen cents a pound higher than last year, and the expected 5 per cent advance may be increased to 10 per cent. or more. The price of crude rubber has advanced five cents per pound within a week and is now quoted at $1 for Para



WINTON 1904 COVERED CAR WITH DETACHABLE TONNEAU.

## Haynes-Apperson Tonneau.

A notable point in the design of the Haynes-Apperson Co.'s automobiles s found in the steady development along the original lines that have proved efficient in this pioneer American company's product. The handsome tonneau car shown last week at the Garden is externally patterned after the most stylish French machines and a number of the advantages of the foreign automobile have been incorporated in the arrangement of the parts. The double-opposed horizontal 5 1-4 x 6 1-2 motor is set forward under a stylish bonnet which may be raised to give easy access to the engine.

All the moving shafts are parellel, end-thrust being avoided by this arrangement and by suppression of bevel gears. Power is transmitted from the engine to the change speed by a Morse silent chain.

The frame is of angle iron reinforced by the wooden frame of the body, which is proportioned for the purpose, possessing great resiliency and resistance to road shocks. The whole body is readily detachable from the metal frame as in any other car.

The front and rear brackets of each front spring, instead of being separately attached to the frame, are made of one long piece with the brackets at either end, forming a solid platform on which the frame rests. The rear springs are supported outside of the body line by the usual hanger at a point above the bottom line of the body and at the rear by a bracket extending for a considerable distance beyond the frame, bending downward so that the front of the spring is considerably above the bottom line of the body, and the rear of the spring is considerably below, thus the spring is not horizontal, but stands practically at right-angles to a blow or shock from an obstruction in the road, therefore, when an obstruction is encountered, instead of the springs trying to draw themselves backward from under the car, and thereby pulling downward on the front end and straining the frame, they are in the best possible position to absorb the shock of the road, making the tonneau very easy riding, saving strain on the springs and strain on the frame and greatly increasing the life of the springs, axles and car. Wheels are thirty-two inches in diameter, with four-inch clincher tires.

The speed changes are operated by a single lever which passes engaging fingers backward and forward along the counter shaft inside of the large centers on which the gears turn when not in use. From the end of this countershaft an ordinary chain transmits the power to the live rear axle.

All bearings, excepting the two main engine bearings, are roller bearings entirely avoiding the necessity of taking down the car to insert new bushings.

The differential is a spur gear provided with two brakes, one on each side of the sprocket wheel, thereby permitting the ordinary brake to be applied to both wheels separately and at the same time. Emergency brakes on the hubs act on each wheel in the same manner.

Water cooling is effected by means of a cellular radiator with a rotary fan in front with 50 per cent. more radiating surface than is necessary, insuring cooling of the engine under abnormal conditions and avoiding the necessity of watching the water. The pump is mechanically attached to the engine shaft, as is the force-feed lubricator which mechanically pumps oil to each bearing, a style of pump which will be described in detail at a later date.

The vaporizers are of the Haynes-Apperson type mechanically measuring off the correct amount of liquid gasoline and at the same time the correct amount of air; as the vaporizer is opened by the pressure of a button, the quantity of air and quantity of liquid gasoline are both increased always in correct proportion, so that the action of the vaporizer is independent of temperature or density of the atmosphere. The throttle control provides a speed range from 120 to 1,600

HAYNES-APPERSON 1904 TONNEAU, WITH DOUBLE OPPOSED HORIZONTAL MOTOR IN FRONT.
Occupied by L. A. Hopkins, L. R. Adams, H. S. Chapin and Mr. Vanderveer of the Long Island Automobile Club.

revolutions per minute, giving great flexibility in the operation of the car.

Ignition is by make-and-break spark, with magneto or jump spark, with device for advancing the spark.

The wheel-steering device is positive and irreversible and so arranged that the entire wheel can be shoved forward out of the way when entering or leaving the car, and drawn back toward the driver and stopped at any one of four or more points that may be convenient to the operator, with the added feature that it can be changed from one of these positions to any other instantly whether the car is at rest or in motion, without affecting the control of the steering, enabling the driver to rest himself on long rides.

The body is a King of the Belgians tonneau of beautiful design, made of cast aluminum in the company's own factory.

## Berg "Euclid" Chassis.

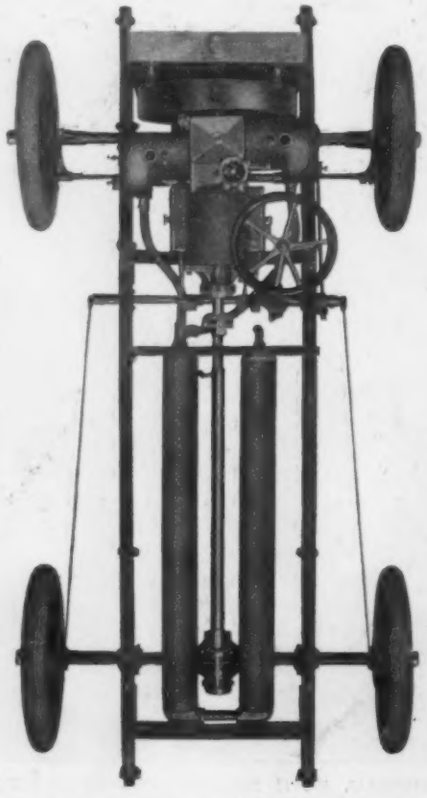
The Berg Automobile Co. made its first New York appearance at the 1903 show, with a 24-horsepower double chain, sliding-gear, four-cylinder, weight 1,700 pounds, chassis, with and without bodies. Forty of these cars were built and sold and the construction of a smaller car, the Euclid, was commenced last July, from designs by James G. Heaslet, and the first Euclid was on the road about December 1, 1903.

The design, while embodying many original details, may be characterized as a careful selection from the best French practice.

The wheelbase is 90 inches, gauge, 56 inches; wheel diameter, 32 inches; tires, 3 1-2 inch clinchers.

The chassis frame is made of two integral channel section sides, right and left, a regular press-work job, cold-rolled steel sheets, 1-8 inch thick, bright, blanked with full length cutting dies and formed in full-length forming dies, in a special press built by the Federal Mfg. Co., which will make shaped and formed chassis frame sides up to 18 feet long. The chassis cross-girts are also of 1-8 inch steel, same channel section, 4 inches high by 1 1-4 inches top and bottom, the spring-eyes, front and rear, being dropped 5 inches below the top chassis line. The girts are secured by turning the ends to right angles and riveting with 3-8 inch round-head rivets. The chassis over all dimensions are 130 inches between spring-eye centers by 32 inches wide.

The motor has four vertical cylinders, cast-iron, in pairs; cylinders and jackets all in one piece, 3 3-4 x 4 1-2 inches bore and stroke, nominal 18-horsepower, with 72 pounds compression and 1,000 revolutions per minute. The full speed change at 1,000 crankshaft r.p.m. is 8, 18, 37, and reverse 6 miles, per hour. The aluminum crank-chamber is divided in the middle horizontally and has bronze bearings, halved, both halves bolted to the upper crankcasing which is flanged and bolted to the chassis, motor and gear frame, made of two bars of pressed channel steel chassis section, reaching back from the front to the intermediate cross-girt. This frame carries the motor and change gear, the gear countershaft being placed directly over the motorshaft, universal joint between the mainshaft and the propellershaft. The change gear is tool-steel, hardened and tempered. The bevel pinion and gear are machine steel, case-hardened. The balance gear has four pinions, machine steel, case-hardened. The rear wheels are not mounted on the rear axles, but on the stationary outer ends of the rear axle sleeves, the rear axle actuating only as a driver, and going through to the outer ends of the wheelhubs, which are engaged by four-jawed clutches. The balance-gear box is divided horizontally, above the sleeve hubs, and the cap can be removed by taking out eight screws, nothing being fastened to the cap. This construction permits the replacement of bevel balance-



CHASSIS OF NORTHERN TONNEAU.

pinions on the road, and gives easy inspection of the interior of the differential casing.

The four springs are semi-elliptic, forty-five inches long in rear, 40 inches front x 1 3-4 inches wide, 4 1-2 inches vertical clearance. The ignition is by storage battery, four Splitdorf coils, and jump spark plugs.

The pistons are of cast iron, 3-16 to 1-8 inch thick, pistons and cylinders both ground in Landis grinding machine; drop-forged rods, I-section; bronze boxes, two bolts, with two nuts each, one nut cut, engaging split pin through each bolt.

Lubrication is forced by exhaust pressure, individual oil-lead needle-valve adjustment. Driving wheels oiled from balance-gear oil basin. Front wheels plain hardened and ground bearings, flooded lubrication, inside ends packed.

Weight of chassis, 1,375 pounds; weight of tonneau car, complete, 1,650 pounds; price, $2,750, complete with wood body, acetylene headlights and full tool-box.

The clutch is leather faced, with springs under the leather to give gradual engagement.

The valves are tool-steel, ground in grinding machine, before grinding into seats, are drop forgings, all valves mechanically actuated, and all of same dimensions.

The valve camshafts and cams are an electric-welded integral job, machine steel, case-hardened and ground; the driving pinion is keyed on a taper seat, and held up with a nut, and the shafts run in bronze bushes. The valve shaft driving gears are of bronze.

The design and construction details of this Berg Euclid are in the very foremost rank of mechanical advance.

## Northern Touring Car.

The touring car which has been added as a 1904 model to the regular line of Northern runabouts made by the Northern Manufacturing Company of Detroit, Mich., has a motor of the double-opposed horizontal cylinder type, set transversely in front. The cylinders are 5 x 5 inches, developing 15 brake horsepower. The flywheel spokes are cast in the form of fan blades, the flywheel being disposed between the motor and the front radiator. The frame of the car is made from angle steel.

Steering is accomplished by means of the usual wheel, the entire steering column tilting forward to give additional space for entering or leaving the vehicle. The speed of the vehicle is controlled by a throttle which automatically advances the spark, there being no separate lever for ignition control.

Two hub brakes, operated by a foot lever, are fitted to the rear wheels A foot lever also operates the reverse speed.

The transmission, which is of the planetary type, is contained in a casting which is in one piece with the engine crankcasing, drive being secured by a universally jointed propeller shaft to the differential on the rear wheel. An unusually large muffler is provided, which should effectually silence the exhaust.

The body is handsomely finished in dark green, striped with automobile red running gear. The upholstering is luxurious and of the best materials. The front seat has a solid back panel, with a partition in the center, affording individual seats. The wheelbase is 84 inches, and the weight 1,500 pounds.

# The New Olds Models.

The motor of the new Olds light tonneau car is of 8-horsepower, horizontal, single-cylinder, the bore and stroke being 5 1-2 x 6 inches,. An extra heavy crankshaft is used, which has three wide main bearings. The cylinder, water jacket, and cylinder head are cast integral with absolutely no gaskets. The motor is set with the cylinder head at the forward end of the vehicle under the footboard, in which position the working stroke of the piston drive is down upon the crankshaft instead of up, thereby preventing the wear upon the cylinder walls caused by the weight of the piston. The fixed halves of the main bearings are set at an angle of 45 degrees, thereby taking both the chain pull and the motor thrust upon a solid bearing, eliminating any chance of breaking stud bolts. Worm gears are encased and run in oil. The construction is such that the cylinder can be removed from the crankcase without disturbing any other part of the motor or the crankshaft; flywheel and transmission gears can also be lifted off without disturbing the rest of the motor.

The transmission is of a new type and runs direct on high speed, the high speed clutch having metal-to-metal friction. The parts are extra heavy, with wide bronze bushed wearing surfaces, and the transmission is oil encased.

The wheelbase is 83 inches, making riding extremely comfortable over the roughest roads. The gauge is the regular wagon tread. Roller bearings are used in all wheels.

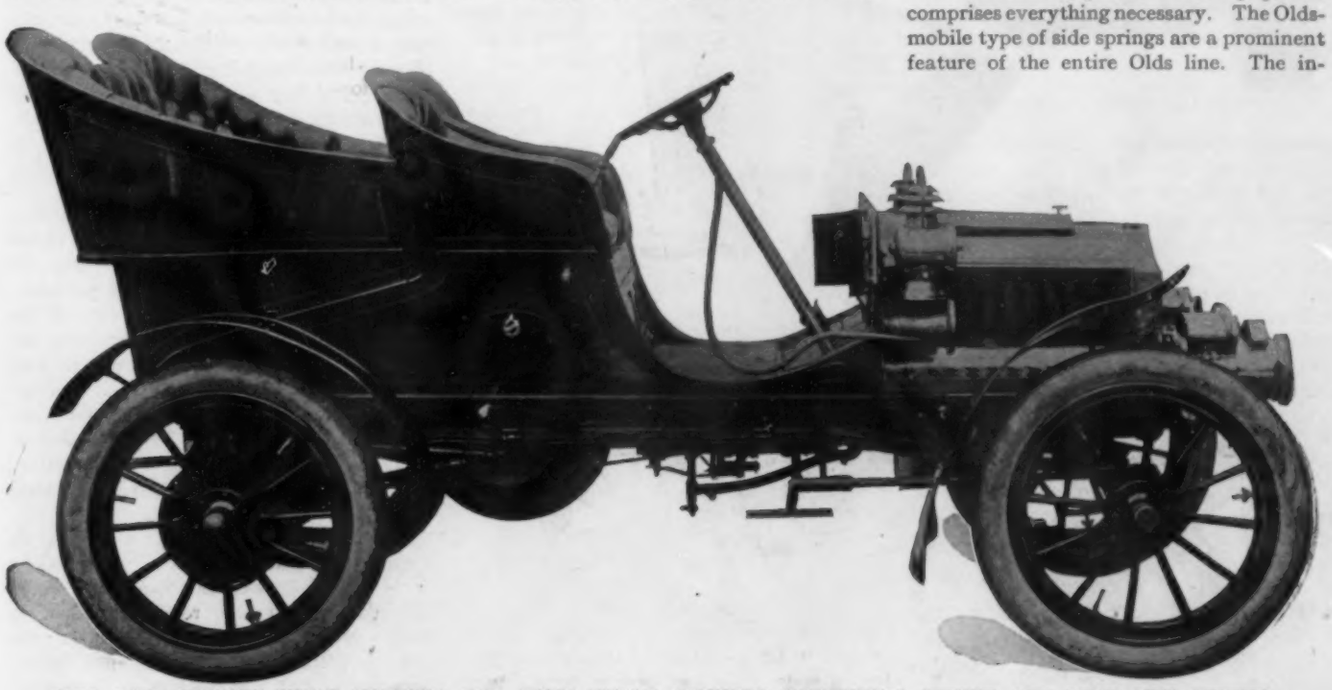
The induction coil and switch are placed on the dashboard. The bonnet is of sheet metal with brass trimmings, at the front being a honeycomb radiator, and inside water and gasoline tanks of ample capacity, and the batteries. The wheels are wood artillery, 30 inches in size, and a new type of flaring mudguard is placed over them as an ample protection to the riders from mud and dust.

The angle steel frame upon which the motor is hung, completely supports the body, and as the body separates at the footboard it is easily removed by the loosening of four bolts for inspection of the motor. The bonnet, dashboard, brake levers and steering post all remain attached to the fame. All yokes, knuckles, sprockets etc., are of the best forged steel, and no expense is spared in obtaining the most durable and reliable parts in every case. The brakes act upon the hubs of the wheels and the differential so that the machine can be stopped on any grade, even if there has been accident to the chain, rear sprocket, differential, or to one wheel.

The body design follows the French ideas and combines comfort and durability. The front seats are divided and the removable tonneau is very roomy and easy riding. When the tonneau is removed, there is plenty of room under the rear deck to carry a suit case, rain aprons, and miscellaneous small articles.

Steering apparatus is of the worm gear type, the steering post tilting back and forward at the axis of the gear, enabling the wheel to be adjusted to the comfort of each individual driver. The spark and throttle levers are on the steering wheel convenient to the hand. High and low speed are obtained by controlling lever at the seat, and reverse and brakes are operated by foot levers. The carbureter is of the simple Olds design, and is large enough to do the work required. Tool equipment comprises everything necessary. The Oldsmobile type of side springs are a prominent feature of the entire Olds line. The in-

OLDS 6-HP. FRENCH TYPE TOURING RUNABOUT.



OLDS 8-HP. FOREIGN STYLE TOURING CAR, WITH SINCLE CYLINDER HORIZONTAL ENGINE AND LEAF SIDE SPRINGS.

creased wheelbase even further accentuates the luxurious ease afforded by these springs over all kinds of roads.

The finish is an automobile green with black trimmings.

The Olds touring runabout is of the same general design as the convertible tonneau, but is lighter and built more along runabout lines, and has a motor of 6 horsepower, with 5 x 6-inch cylinder. The engine and transmission are of the same types used in the tonneau, but somewhat lighter. The wheelbase is 76 inches; tread, standard. Roller bearings are used in front and rear wheels. The location of the switch, coils, radiator, etc., are as in the larger car, and in practically every feature the general idea of both machines is carried out along similar lines.

In this new runabout is provided a single seated carriage with motor power for any kind of work and speed enough to satisfy the most exacting. The finish is automobile red with black trimmings. The body is easily removed, and there is considerable carrying capacity under the rear deck where storm aprons and large packages can be placed.

## Studebaker Electrics.

The automobile department of Studebaker Bros. Mfg. Co., South Bend, Ind., has greatly increased the number and variety of cars comprised in its line It has recently enlarged its automobile manufacturing facilities and will have ready for the 1904 season both electric and gasoline cars. In electric vehicles it will offer runabouts, stanhopes, victorias and surreys, all having certain characteristics in common, which may be briefly described as follows.

STUDEBAKER ELECTRIC STANHOPE WITH DIVIDED BATTERY.

In their design the object has been to combine lightness with strength and elegance. The frames of the running gears on the runabouts and stanhopes are of tubular steel, which has proved in service to provide remarkable strength and lightness. These frames are independent of the bodies, and it is stated that none has ever broken, even in collision. The wheels are of wood of the artillery type. Double-tube pneumatic tires of the detachable type are employed, except on the surrey, where solid tires are fitted.

The spring suspension provides full elliptic springs in the rear and semi-elliptics in front. This method of spring suspension has been demonstrated by the long experience of the Studebaker company to combine strength and easy riding qualities. All the important weights on these cars are carried above the springs. On the single-seated pleasure vehicles one motor is used, suspended from the frame of the running gear on which the body rests. Driving is by chain, and the motor is so arranged that it can be swung backward or forward, and then fastened rigidly in position. thus securing perfect chain adjustment.

On the victoria and the surrey the tubular frame running gear is not employed, in order to bring the bodies of these vehicles as low hung as possible. The running frame on these models is integral with the frame work of the body, which is heavily reinforced by steel rocker plates, thus providing a thoroughly rigid and indestructible support for the body. The motor suspension on the victoria is as above described, and the motor is rated at 50 volts and 30 amperes.

The controllers of all Studebaker electric machines give four speeds in either direction, the maximum speed being for the passenger vehicles 14 miles per hour. The current can be entirely cut off by shifting the position of a key. which can be removed when the car is not in use, rendering it safe to leave without an attendant Transmission is by chain, an extra heavy roller chain being employed, which in service has proved unbreakable. The pull of the chain is taken by distance rods.

The Studebaker stanhope No. 1363 is regularly furnished with a closed top, and it is especially well adapted for a physician's use. It is a remarkably stylish and serviceable stanhope, as well as possessing ample leg room and ease of entrance and exit. Wheelbase is 62 inches; tread, 54 inches. Wheels are 30 inches in

STUDEBAKER PHYSICIAN'S ELECTRIC CARRIAGE WITH SINGLE MOTOR EQUIPMENT.

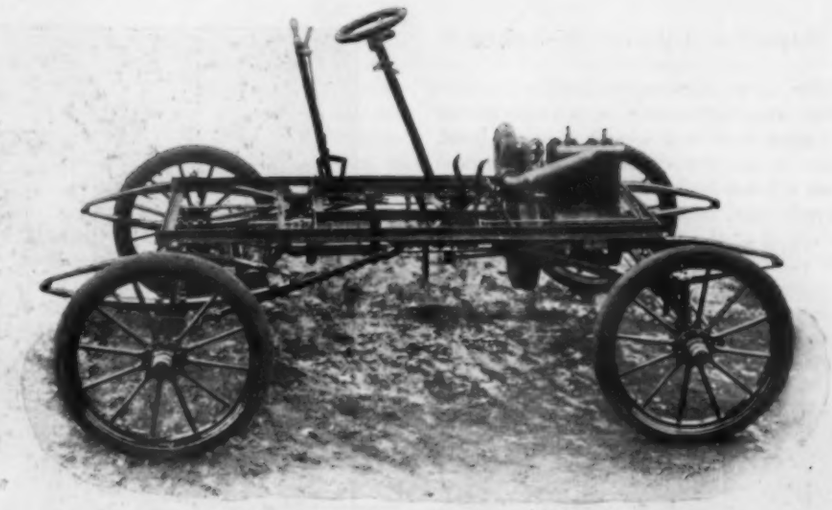
diameter, with 3-inch tires. The battery consists of 24 cells of exide and gives a mileage of 40 on one charge. It is furnished in either rich shades of maroon or black and dark green. Weight, 1,500 pounds; price, $1,150.

The Studebaker victoria No. 1396 has a divided battery space of dimensions suitable to take either a 24 cell exide battery or a 36-cell Edison battery. The body is designed on strictly automobile lines with a hood in front where part of the battery is carried. Extreme comfort has been sought in this little victoria and the greatest possible ease of steering and controlling. The car is regularly equipped with a hood; the seat is deep and wide; upholstery in cloth to match the finish, which is standard in dark shades of greens and maroons. The tread is 54 inches; wheelbase, 69 inches. All four wheels are 30 inches in diameter, with 3-inch detachable tires. Speed, 14 miles per hour; weight, 1,600 pounds; price, $1,600, with exide battery; $1,775, with Edison battery.

## Mitchell Air-Cooled Cars.

The new model light car brought out by the Mitchell Motor Car Company of Racine, Wis., has a number of interesting features. It is designed to meet the demand of a rapidly growing class of purchasers who want a light car built on the same general lines and principles as the so-called touring car.

A two-cylinder air-cooled vertical motor has been adopted, the cylinders being 3 1-2 x 4 inches and fitted with radiating gills of sheet copper. Pistons, cylinders, rings and all bearings are ground and lapped to 1-10,000 of an inch. The crank bearings, of gun metal, are three in number and of ample length to secure long life. Both valves are operated mechanically and the engine develops seven actual horsepower, at 1,200 revolutions per minute. Control is by spark and throttle, a float-feed spray carbureter of latest pattern being used. The air-cooled engine

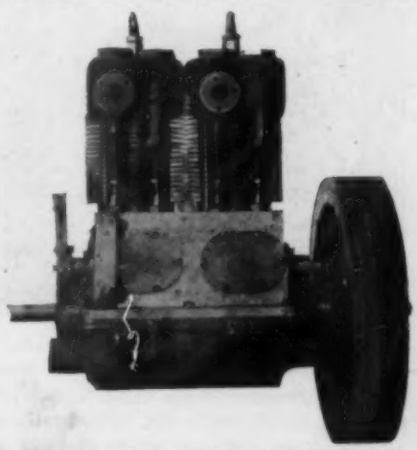


MITCHELL RUNABOUT CHASSIS—BLOWER BELTED TO ENGINE.

is provided with a belt-driven fan to assist cooling. The flywheel contains a leather-faced cone-clutch of the usual design connected to the transmission by a shaft with universal coupling. The transmission is of sliding gear type, having three forward speeds and reverse, with direct drive on the high speed, all speeds being obtained by shifting one lever.

The main frame is constructed of channel steel 1 1-2 x 3-16 inches, double riveted top and bottom and reinforced, and to this frame are fastened the gasoline tanks and batteries, also the dash which holds the lubricating device and coil, so that the body may be removed without interfering with a connection of any kind whatsoever. The springs are full elliptic of unusual length, making the car a splendid rider on the roughest road. Ball bearings are employed throughout, and wheels are of artillery steel type.

The oil reservoir is located on the front of the dash underneath the hood and receives pressure from the crankcase. The oil is forced from the reservoir into a row of sight feeds on the driver's side of dash, where the operation can be easily observed, and from thence to the engine and the various bearings. With the stopping of the engine the oil ceases to flow and recommences at once when the

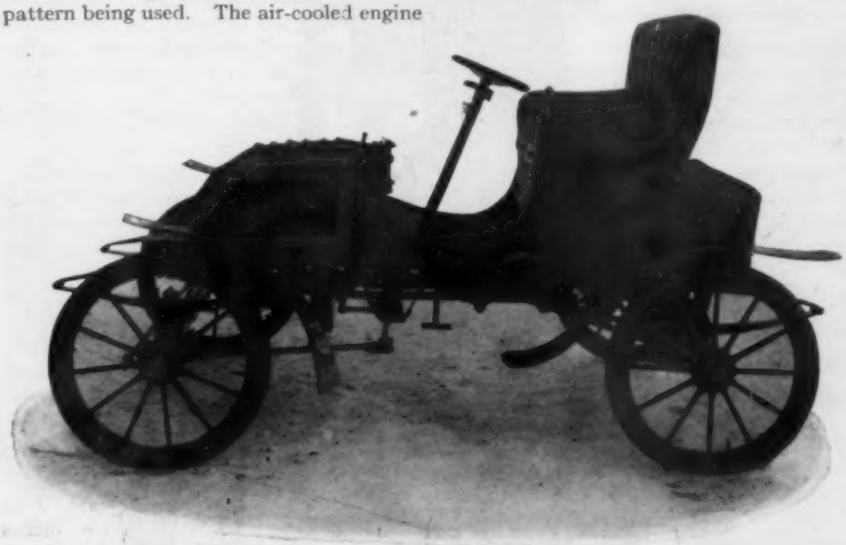


MITCHELL AIR-COOLED ENGINE.

engine is started. The faster the engine runs the faster the oil will flow, so that with the needles once regulated for the proper amount at a given engine speed, the feed will be right for all speeds.

Ignition is by the usual jump-spark system with coil and two sets of batteries. The make-and-break device is an especially good feature, giving the greatest possible battery economy and so placed that it is absolutely impossible for the points to become foul with oil or dirt. Self-locking wheel steer is employed and provision is made for taking up the wear. The muffler is provided with a cutout.

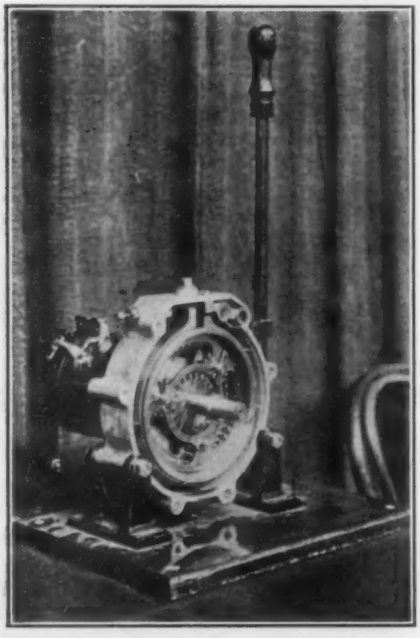
The Mitchell touring car has a four-cylinder, air-cooled engine and is built on much the same lines as the smaller car, except that it has double chain drive. It weighs 2,400 pounds and the tonneau is an especially large and roomy one, both as regards length and width. With this exception the two cars are built on exactly the same lines.



MITCHELL TWIN CYLINDER AIR-COOLED FRENCH TYPE RUNABOUT.

## Buckboard Change Speed.

The most important addition to the Orient Buckboard for 1904 is a very neatly designed sun and planet 2-speed gear, enclosed in the crankcase and worked from a hand lever on the left side of the driver's seat, making the low speed about one-third of the high speed. This makes the car climb a 25 per cent. grade with two passengers up, speed from two to ten miles per hour. On the high speed, the gear is 6 to 1, steel pinion on the motor shaft to a bronze gear on the rear axle.



BUCKBOARD CHANGE SPEED.

A pedal actuated brake-band is applied to the balance gear drum. The motor is air-cooled, and is said to be capable of 3,000 turns per minute. The muffler has been given an increased length, and the speed change gear is noiseless.

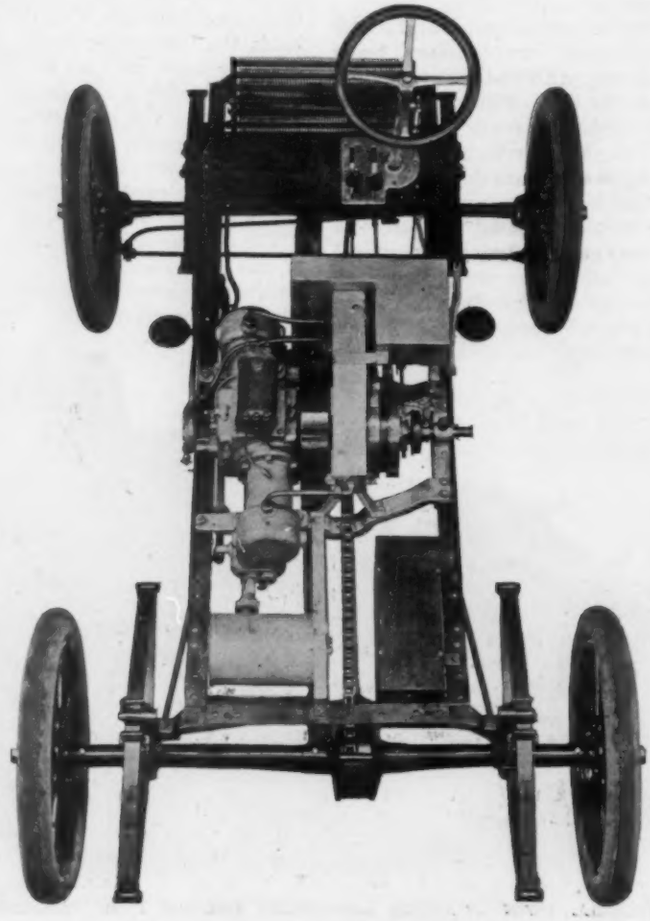
## The Ford Cars.

The Ford, manufactured by the Ford Motor Company, of Detroit, is a well-made machine, designed strictly on what may be called American lines of construction and engine disposition. The engine has two opposed cylinders, 4x4 inches, and is placed horizontally under the front seat, with two crank chambers of cast iron which have a covering plate on the top carrying an automatic pressure feed lubricator with short leads to the main engine crank-bearings and the pistons.

The change speed is made up of five spur gears inclosed in an oil-tight dust-proof case, the high speed locking the transmission to the motor shaft and giving direct drive with throttle control.

A feature of which the Ford company makes much is the grouping of the motor, transmission and tanks so that, except the radiator, the several elements of the power plant make a compact unit The change-speed levers, pedals and all actuating and controlling devices are firmly affixed to the chassis, admitting of the removal of the body without disconnecting any of the parts. The Ford is built in two standard models on the same chassis: a runabout, selling for $800, and a tonneau model selling for $900.

APPERSON BROS.' 40-HP. DOUBLE TONNEAU, WITH VERTICAL MOTOR.

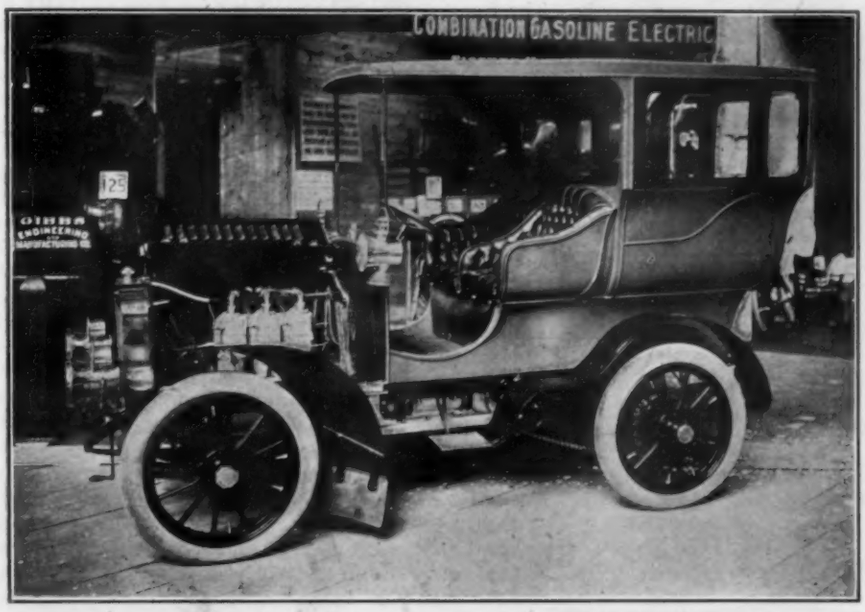


CHASSIS OF FORD AMERICAN TYPE CAR.

## Apperson Bros. Tonneau.

The double tonneau car of the Apperson Bros. Automobile Company is one of the most luxurious vehicles yet built by an American manufacturer. The tonneau carries four individual seats which with the two front seats provides six individual seats for the occupants of the car The six seats are all made with backs of equal height. Numerous receptacles are provided in the car for storage of small articles and a compartment and two large drawers are arranged under the tonneau floor at the rear for tools and spaces.

The power equipment of the car is a four-cylinder 40-horsepower vertical motor, located in front, with sliding gear transmission, giving four speeds and reverse, driving through two chains to the rear wheels from the cross shaft which carries the differential housed in the transmission casing. Extra large wheels, 36 inch, are used shod with 4 1-2 inch tires.




CONVERTIBLE "THOMASINE" BODY ON THOMAS THREE-CYLINDER CAR.

## The "Thomasine" Body.

A new body that "puts an automobile in an all-the-year-round, night-and-day class," thereby greatly increasing its usefulness and the comfort of the passengers at all seasons, was the "Thomasine," shown at Madison Square Garden last week. This was designed by E. R. Thomas of the E. R. Thomas Motor Co., assisted by James Koen, a Buffalo body builder It has a capacity of six passengers and can be quickly converted from a closed carriage to an open summer car without disturbing the occupants.

The car, open for fair weather, resembles the ordinary canopy-top designs, but by an ingenious arrangement, beveled plate glass sides and front, which are suspended overhead, may be easily let down, completely enclosing the four sides of the tonneau. The rear sash may be easily detached or left in place as a dust barrier. The driver is also protected by the top, usual glass plate front and side curtains. The enclosed rear compartment can be heated comfortably in cold weather by a coil of pipes supplied with hot water from the circulating system. A car fitted with the Thomasine body can be used for theaters and balls without exposing the occupants to the night air.

The general appearance of the body is as pleasing and graceful as the usual tonneau design. The new design, on which patents have been applied for, adds so much to comfort that arrangements have been made to equip the majority of the Thomas cars with "Thomasines" at a reasonable advance over the list.

### Mudlarks Reunion at the Garden.

A hundred of the participants in the New York-Pittsburg Endurance run, with half as many guests, held a reunion in Madison Square Garden concert hall after the show on January 20. The hall was decorated for the occasion; confetti spread in the aisles up the stairs and through the café to the banquet hall. The dinner cards were parodies on the observers' score books and the "Mudlarks" were tagged with mud-colored badges stamped in gold. Beer was served from big tin cans labeled "Gasoline, 76°." An orchestra furnished the accompaniments to a clever song by C. H. Gillette, who supervised the observers during the run.

S. A. Miles, who superintended the run, was toastmaster, and the following speakers responded to toasts: W. E Scarritt, president of the Automobile Club of America; F. X. Mudd, of the Chicago Automobile Club; Harry Unwin, ex-secretary of the N. A. A. M.; Windsor T. White, Ford Nickerson and Webb Jay, drivers of cars on the run; K. C. Pardee, starter; A. B. Tucker, official reporter; C. H. Gillette, superintendent of observers, and Ralph Morgan, who drove his car through the run as a spectator.

## UNWILLING RECRUITS TO THE MOTOR LEAGUE NOW ENJOY THE JOKE.

CLEVELAND, Jan. 25.—Many Clevelanders took advantage of the reduced rates to New York secured through the efforts of the American Motor League. At the local ticket offices these reduced rate tickets were sold to any one who wished to go to the show, but when it came to securing the rebate for the return trip, the ticket holders were informed that they could not secure the reduced rate unless they were members of the A. M. L.; then they were informed that they could secure the required membership by paying the $2 initiation fee on the spot. It was a case of pay the $2 or lose the rebate, which in many cases was several times that amount, so that the great majority paid, although a few refused to submit to what they characterized as a "hold-up", and so lost their rebate.

While it is generally looked upon as a unique method of securing members to an organization, the majority of the "new members," after they had cooled off, were inclined to consider it perfectly legitimate, as it had been previously announced that none but members would receive the reduced rates.

### N. A. A. M. 1904 Elections.

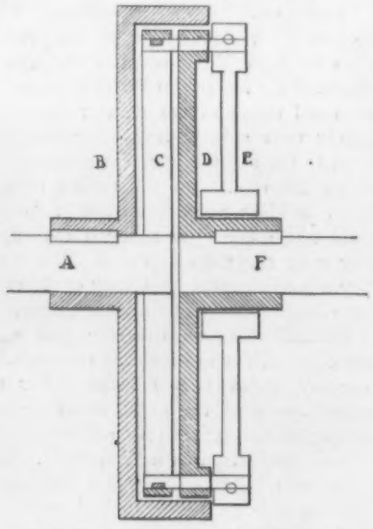
At the annual meeting of the N. A A. M. held in New York at Madison Square Garden January 21, the president's report indicated that the affairs of the organization are in excellent condition. The election of additional members of the executive committee resulted in the selection of the following: Alexander Winton, M. J. Budlong, M. L. Goss, of the Baker Motor Vehicle Co., and G. W. Bennett of the Thomas B. Jeffery Co.

The executive committee met later, January 24, and elected the following officers: M. J. Budlong, of the Electric Vehicle Co., president; Windsor T. White, of the White Sewing Machine Co., first vice-president; Charles Clifton, of the Geo. N. Pierce Co., second vice-president; E. H. Cutler, of the Knox Automobile Co., third vice-president; W. R. Innis of the Studebaker Bros. Mfg Co , treasurer

Owing to the large number of applications for space at the automobile and Sportsmen's Show to be held in Detroit from February 15 to 20, the management has been obliged this year to plat a portion of the gallery as well as the main floor of the Light Armory. All the spaces have been sold and about a dozen applicants could not be accommodated.

# Show Wrinkles in Construction.

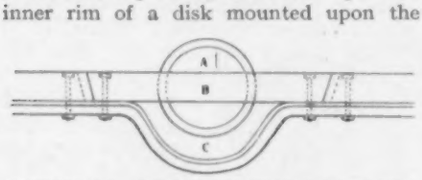
The Automotor centrifugal clutch, which has been used by the Automotor Co. for the past four years, depends upon centrifugal force for its action. The device consists primarily of a disk with a sleeve keyed to the engine shaft. This disk carries two L-shaped weighted arms, the




SECTION OF AUTOMOTOR CLUTCH.

weights being placed at the longer extremities of the arms. The shorter end of each arm carries a roller, which bears upon a wedge working through a slot in the disk. When the clutch is not acting these wedges force the short arms from the center and draw the weighted arms in toward the shaft. The arms are secured to the disk by pins which protrude through the disk and are enlarged and slotted. Into each slot is keyed a short link which engages with one end of an expanding shoe, the other end of which is pivoted on a fixed pin. The connection between the weighted arms and the expanding shoe is rigid, but capable of adjustment to allow for wear of the expanding shoe. This possibility of adjustment for wear prolongs the life of the clutch and is considered one of its most advantageous features.

The two expanding shoes bear upon the inner rim of a disk mounted upon the




REMOVABLE SECTION OF FRANKLIN FRAME.

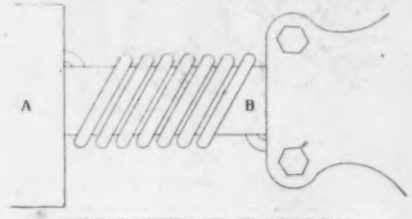
transmission shaft, the bearing surfaces being of cast iron and working in oil. As the speed of the motor increases the weighted ends of the arms on the driving disk are forced out from the shaft by centrifugal action, thus rotating the slotted pins and expanding the internal rim bearing shoes and forcing them against the rim of the driven disk with a pressure which varies automatically with the speed of the motor.

The clutch case is continuous with the gear case, which contains a planetary gear giving three speeds forward and reverse and running in oil.

The special advantage of this clutch is that it will not slow down the engine, but by slipping will give warning when a change should be made. On account of this ability to slip it also starts the car easily and without shock or jar.

In this year's model of the Franklin, a portion of the side frame has been made removable, so that transmission gears can be reached without disturbing the engine, which is placed transversely. The frame is reinforced at the broken-away point by a flanged metal loop which is bolted to the frame on either side beyond the removable section, as shown. The removable piece can be taken out upon the removal of two similar bolts holding it to the metal loop.

A feature of the Walter car is the spring drive, which is claimed to take up all jar in starting and even to allow the start to be made on the high speed. A powerful helical steel spring is coiled about the driving axle between the brake case and a universal joint is shown in the diagram. When the clutch is thrown in, the spring




SPRING DRIVE OF WALTER CAR.

takes up the strain until it is fully compressed, when the shaft locks into a positive drive.

## Cleveland Show Space All Taken.

CLEVELAND, Jan. 25.—Practically all the available space in the Grays Armory has been engaged for the automobile show, which will be held here the week of February 29, under the auspices of the Cleveland Automobile Club. The list of exhibitors is considerably larger than it was last year because several of the large local manufacturers who did not exhibit a year ago will exhibit through their local branch stores this year. The complete list of exhibitors and their lines is as follows:

Ohio Motor Car Co., Cadillac, National Electric, and Stearns; Berg Automobile Co., Berg; Winton Motor Carriage Co. branch, Winton; Geneva Automobile & Mfg. Co. branch, Geneva; White Sewing Machine Co. branch, White; H. S. Moore, Star; Chisholm & Phillips' Automobilium, Peerless and Knox; Automobile Garage & Repair Co., Packard and Autocar; R. T. McGoon, Pope-Toledo; Price Brothers Carriage Co., Baker; Paul Gaeth, Gaethmobile; Ohio Oldsmobile Co., Olds; Bascomb Boat Company, Bascomb motor launches; Whitcomb Automobile Co., Rambler and Ford; National Carbon Company, batteries; 20th Century Mfg. Co., lamps; Veeder Mfg. Co., odometers and cyclometers; Hussey Drop Forge & Mfg. Co., supplies; Badger Brass Mfg. Co., lamps; Continental Caoutchouc Co., tires; Gray & Davis, lamps.

## HIGH POWER MOTOR BOATS AT THE SPORTSMEN'S SHOW.

There has been an extraordinary demand by manufacturers of fast motor boats for space at the Tenth Annual New York Sportsman's Show, to be held in Madison Square Garden from February 19 to March 5, and special arrangements have been planned for accommodating them and making the motor boats a leading feature. The lake which will occupy the center of the main floor will be 190 feet long by 70 feet wide and will be so constructed as to afford an exhibit space ten feet in width on either side and at both ends of the lake. Exhibitors of marine engines and launches will occupy this space, and will also be afforded dock privileges for the exhibition of their launches which will have dock space immediately in front of their respective exhibits. The boats to be so exhibited will vary in size from eighteen feet to thirty-five feet in length, and will represent the best types of the modern high-power boat. Among these will be a power boat that the Gas Engine and Power Company and Chas. L. Seabury, of Morris Heights, are building especially for the show; Smith & Mabley's *Vingt-et-Un* and the new boat that Hollander & Tangeman are having built and fitted with F. I. A. T. engine, which has been matched for a race against the *Vingt-et-Un* in the spring; and an exhibit of motor boats to be made by the American branch of Panhard & Levassor.

The exhibitors who have thus far taken space are: The Western Gas Engine Co., Mishawaka, Ind.; J. W. Newbury, 471 W. 22d St., N. Y. C.; Pierce Engine Co., Racine, Wis.; C. H. Blomstrom Motor Co., Detroit, Mich.; Lozier Motor Co., Plattsburg, N. Y., and N. Y. C.; Electric Launch Co., Bayonne City, N. J.; Messrs. Panhard & Levassor, 230 W. 13th St., N. Y. C.; Eagle Bicycle Mfg. Co., Torrington, Conn.; Smith & Mabley, 513 7th Ave., N. Y. C.; Hollander & Tangeman, "F. I. A. T.," 5 W. 45th St., N. Y. C.; Standard Motor Construction Co., 180 Whiton St., Jersey City, N. J.; Gas Engine & Power Co., and Charles L. Seabury & Co., Morris Heights, N. Y.; Wm. H. Brodie Co., 45 Vesey St., N. Y. C.; Lackawanna Motor Co., Detroit, Mich.; Charles A. Strelinger Co., Detroit, Mich.; Buffalo Gasoline Motor Co., Buffalo, N. Y.; White Craft & Power Co., Port Richmond, N. Y.; Fairbanks Co., N. Y. C.

# Herald Square Hall Show.

Following the closing of the exhibition at the Madison Square Garden a number of accessions were made to the Herald Square automobile show, which rounded out the latter into a very attractive, interesting and fairly representative exhibition. Among the exhibits transferred from the Garden were two Fredonia touring cars, the big seventeen-passenger Mack car, the Coldwell motor lawn mower, the 20-30 horsepower Boyer chassis, two Cadillacs, a Winton, two Relay touring cars and a number of parts and accessories. These accessions brought the total number of exhibitors to over fifty, and the number of complete vehicles exhibited to thirty-four.

The large floor space of the Herald Square Hall, occupying, as it does, the entire top floor of the huge Macy building—a total area of 65,000 square feet—with the abundance of light from both the glass arched central nave and the side windows as well, allows the exhibits to be shown to their utmost advantage and obviates the crowding together which was such a disadvantage at the Garden. Not only are the spaces large, but the aisles as well and in consequence the exhibits were shown to their best advantage. The hall was tastefully decorated with flags, bunting and artificial palms and an orchestra played both afternoon and evening.

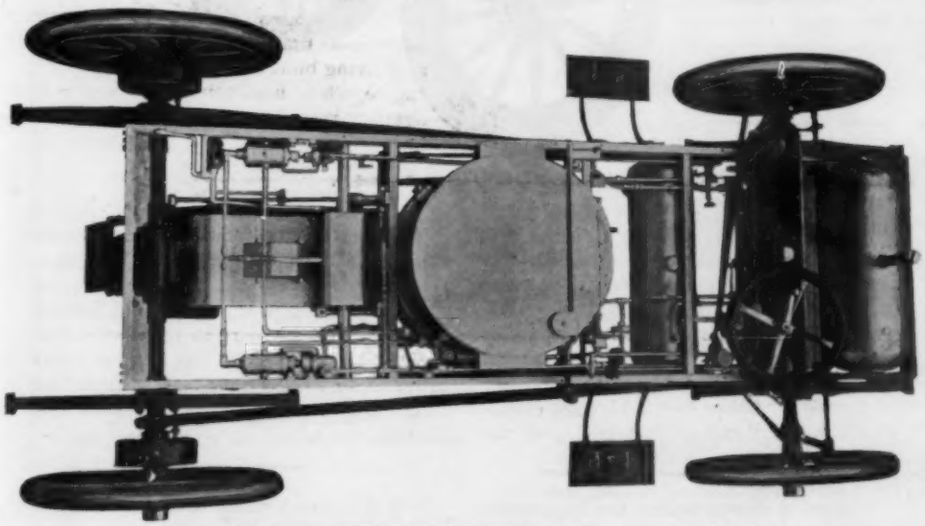
All three forms of power—gasoline, steam and electricity, are represented in the complete vehicles shown, the gasoline machine comprising more than half of the total number. Air cooling is represented by the Franklin and the Cameron cars, both of which were also exhibited at the Garden. The water-cooled exhibit includes ten foreign and eight domestic examples. There are eight electric vehicles of various sizes and three motor bicycles.

The place of honor in the center of the hall is occupied by the huge Paris-Madrid racer of H. S. Harkness, which attracts a great deal of attention. It is a big, rough brute of a machine, devoid of all grace and finish, but with power indicated in every line. It is almost completely enclosed by an unpolished aluminum body, which conceals all the working parts.

The big motor vehicle built by Mack Bros. Co., of Brooklyn, which seats seventeen passengers, and the Coldwell motor lawn mower, both of which were described last week, also attract attention.

A new vehicle which is shown here for the first time and was not shown at the Garden, is the Empire steam touring car, made by Wm. H. Terwilliger & Co. of Amsterdam, N. Y., and which is of particular interest on account of being fitted with an air brake operated in a manner similar to the air brake on a railroad locomotive and acting on rear wheel hubs. The engine is 15-horsepower, horizontal, double cylinders, with Stephenson valve gear, all encased and running in oil. It is hung pivotally to the rear axle, and the cylinder end is suspended from the boiler by a ball and socket joint to compensate for spring action. The boiler is of the semi-flash water-tube type, suspended in the center from the main frame. The drive is chainless by a spur gear and pinion, the main driving gear, 4 pitch with 1 1-2 inch face, being of steel. The differential is of the spur gear type. The gasoline tank, of 15 gallons capacity, sufficient for 125 miles, and the water, of 40 gallons capacity, sufficient for 40 miles, are located under the front hood.

EMPIRE STEAM TOURING CAR FITTED WITH TONNEAU BODY.



TOP VIEW OF CHASSIS OF EMPIRE STEAM TOURING CAR.

The engine is reversed by foot pedal. The throttle and air brake control are located in the center of the steering wheel and are both actuated by one lever. A side lever controls the air pressure in the fuel tank and also the auxiliary water supply. The steering wheel may be tilted in anyone of four positions to suit the convenience of the operator.

The frame is of channel steel, with reinforced corners supported on full elliptic springs. The running gear is of steel tubular construction, with American roller bearings on axles and Midgely steel tubular wheels. The wheelbase is 87 inches, the tread is 56 1-2 inches and the weight 1,970 pounds. The body is a five-passenger tonneau.

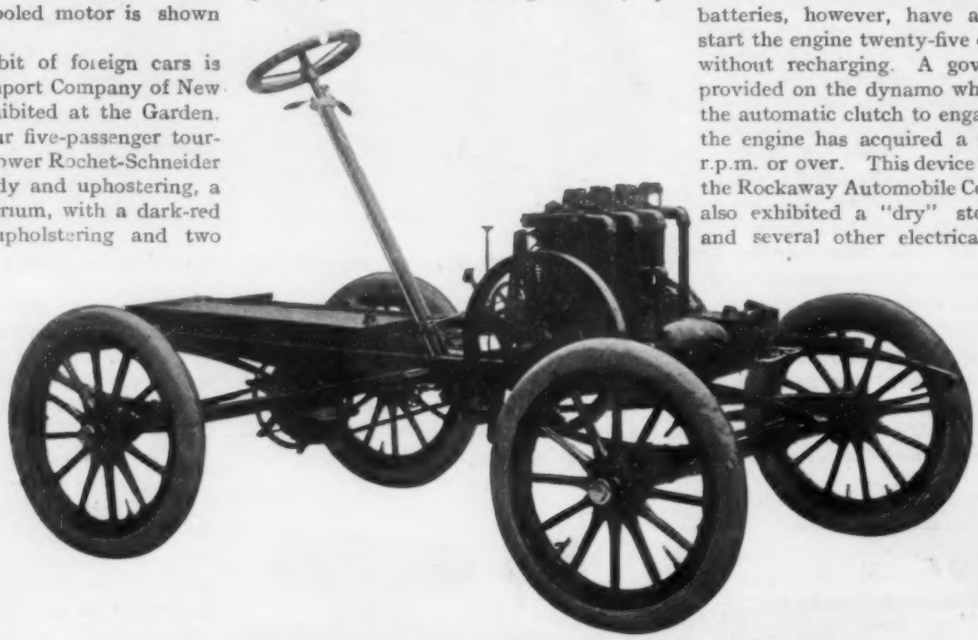
The Geneva steam touring car, with condenser in front, also shown for the first time, has a double cylinder, double acting engine directly geared to the rear axle, a flash boiler located under the hood and a vertical condenser in front giving the vehicle the aspect of a gasoline touring car. The engine is directly connected to the compensating gear by a spur gear, no chain being used. The boiler and heater connections are of 5-8 inch cold drawn seamless steel tubing. The burner is of steel tubing of the same gauge and is automatically regulated by a thermostat.

The steering wheel is located on the right side of the car with the throttle and water control on the same standard. The reverse is by a foot lever.

Most conspicuous among the gasoline vehicles of domestic manufacture are the Harkness racer and the Mack Brothers Company's big car, both of which have already been referred to.

The two Fredonia 12-hp. touring cars from the Garden make a very striking appearance on account of their very attractive finish. One is painted in blue and gold with white upholstering and the other finished in green and gold with black upholstering. Two 24-hp. Relay touring cars, two Cadillacs, one with, and one without a tonneau, three Franklin runabouts, an Oldsmobile runabout and an Oldsmobile delivery wagon and a Winton touring car are exhibited by local agents. The Cameron runabout with 6-hp. vertical air-cooled motor is shown by its makers.

The largest exhibit of foreign cars is that of the Auto Import Company of New York, who also exhibited at the Garden. This firm shows four five-passenger touring cars, a 20-horsepower Rochet-Schneider with dark-green body and uphostering, a 12-horsepower Criterium, with a dark-red body and black upholstering and two



CHASSIS OF FRANKLIN CAR, SHOWN AT MADISON SQUARE GARDEN.

Renaults of 10 and 14 horsepower, respectively.

Another interesting exhibit of foreign cars is made by Kenneth A. Skinner of Boston, who is United States agent for the De Dion-Bouton and Boyer cars. This display includes the De Dion little populire model with 6-horsepower motor in front, a 6-horsepower brougham of the same make, a 20-30-horsepower Boyer chassis, and a 9-horsepower "L'Elegante" touring car.

There are also two 15-horsepower Panhards exhibited by Alfred Chasseaud, representing Outhenin-Chalendre, of Paris.

The most interesting electric vehicle shown is a twelve passenger opera 'bus, made by the Synnestvedt Vehicle Company of Pittsburg, Pa. This vehicle is elegantly finished in black with black leather upholstering and plate glass windows. Ten persons can be accommodated inside the body and one beside the driver on the front seat. It weighs 3,500 pounds and will run fifty miles on one battery charge. There are three speeds ahead, of five, nine and thirteen miles respectively, and two speeds on the reverse. The drive is by chain from the armature shaft of the motor to the hubs of the rear wheels. A five passenger touring car was also shown.

A very complete exhibit of electric vehicles is that of the Buffalo Electric Carriage Company. The exhibit included the Buffalo electric touring car which made the trip from Boston to New York last October, a Buffalo golf brake and two Buffalo electric stanhopes. Two Baker electrics, a stanhope and a runabout were exhibited by the local agents, the American Auto-Storage Company.

The motor bicycles presented a novelty in the shape of a drop frame model with a 3-horsepower motor arranged obliquely in the drop frame, and a cushioned seat in place of the ordinary saddle. It was also designed to carry an additional seat at the back—of the dos-a-dos style. The weight of the single vehicle is 100 pounds and of the dos-a-dos style, 150 pounds. It is made by the Rugmobile Company of America. Other motor bicycles exhibited are the Reading Standard and the Indian, both of which have new grip controls this year.

A novelty shown among the accessories is an automatic starter for gasoline engines, consisting of a small enclosed electric dynamo and motor, a set of storage batteries and several automatic devices by which the dynamo keeps the batteries fully charged while the engine is running, thus keeping in storage sufficient power to start the engine at all times, besides operating lights and spark coils if desired. The device is shown attached to the chassis of a gasoline runabout, the dynamo being placed on the frame back of the engine and connected to the latter by a chain and sprocket, the latter having an automatic clutch.

In starting the dynamo is used as a motor, power being taken from the batteries, and the engine is thus turned over. After the engine starts up, the electric motor acts as a dynamo and recharges the batteries. The dynamo runs only a small part of the time, except at night when the lamps are used and then requires a small amount of power, for as soon as the batteries have acquired their full charge, an automatic clutch releases the dynamo from engagement. This same automatic device comes into play to connect the dynamo into circuit to recharge the batteries when required as would be the case after they were used to start the engine several times in close succession. The batteries, however, have a capacity to start the engine twenty-five or more times without recharging. A governor also is provided on the dynamo which will allow the automatic clutch to engage only when the engine has acquired a speed of 150 r.p.m. or over. This device was shown by the Rockaway Automobile Company which also exhibited a "dry" storage battery and several other electrical devices.

Two portable automobile houses were exhibited by the Springfield Moulding Works, and a 21-foot launch equipped with a 5-horsepower engine and having a seating capacity of 12 to 14 persons, was shown by the Western Gas Engine Company. The Palmer four-cycle automobile motor was shown by Palmer Bros., of Cos Cob, Conn.

---

It will interest many automobile engineers and constructors to know that William Corliss, a brother of the famous inventor of the Corliss engine, has developed a new form of rubber tire which has puncture-proof qualities. These are obtained by an ingenious combination of rubber, steel, and fabric. Inquiries concerning the new tire can be addressed to the inventor, at the Banigan Building, Providence, R. I.

# N. A. A. M. Members Dine Together.

The annual banquet of the National Association of Automobile Manufacturers was held Friday night, in the Café Martin. It was attended by about 250 members of the organization and their friends. The speakers' table was arranged transversely across the end of the room and the other banqueters were seated in small groups at tables throughout the hall. The tables and room were pleasingly decorated with ferns. Each course of the menu was coupled with a brief quotation from one of the classic poets that expressed a sentiment particularly fitting to the viand.

Charles Thaddeus Terry, counsel for the Association, acting as toastmaster, introduced Milton J. Budlong, president of the N. A. A. M., who spoke on the "Past, Present and Future" of the organization, reviewing briefly what it had accomplished, what work it had in hand and the possibilities that lay ahead of it.

"Some Automobile Ideals" was the toast to which Prof. Frederick R. Hutton responded. The speaker outlined what, in his opinion, was most wanted from the manufacturer by the buyer of a motor car. Perfection and efficiency of the motor he placed first, and urged that the manufacturer should give a guarantee of the actual brake horsepower of the motor and of the horsepower developed at the wheel for the purpose of showing the power lost in transmission. He neglected to observe that all motors are carefully tested for efficiency and horsepower in the factory before they are placed in the vehicles and that the complete vehicles are then fully tested on the road or on a track before shipment.

Mr. Hutton objected to the introduction into our language of French automobile terms, such as "automobile", "chauffeur" and "chassis," and dwelt upon the absurdity of the original meanings of some of the words and their incongruity when used in their new application. He suggested that instead of saying, "I am going automobiling," we use the phrase, "I am going pelling." But he didn't mention what happens when motorists are caught going pell-mell through a town. The adoption of foreign words into our own language is largely responsible for its wealth of synonyms and the delicate shades of meaning which can be conveyed by it. It is hardly to be expected that we shall at this late date cease to adopt expressive words from other languages for which we have no English equivalents.

Col. Albert A. Pope's subject was "The Wheel versus the Horse," a subject of which the bicycle pioneer never grows weary. Other speakers were William H. Hotchkiss, president of the New York State Automobile Association, whose subject was, "Automobilists and the Law," and Hon. Julius M. Mayer, whose topic was "Automobiles as Viewed from the Bench."

### Plans for Auto Boat Racing.

According to the plans of the executive committee of the American Power Boat Association, motor boat racing will receive an impetus this spring which will undoubtedly result in increased activity in the manufacture of fast launches.

The first race scheduled to take place will be held on Decoration Day, 1904, and will be open to all boats whose owners' names are enrolled in the association. The race will be in Manhasset Bay, off Port Washington, L. I.

The association has decided to offer a perpetual challenge cup, valued at $1,000, open to boats belonging to any recognized yacht club in the world. Boats must be not less than twenty-five feet water line. The first match, consisting of three races, will be held on the Hudson River, June 23, 24 and 25, the start and finish being off the Columbia Yacht Clubhouse at the foot of 86th Street; the course to be twenty nautical miles, out and back. This series should bring out some fast boats and a number will doubtless be designed for the purpose of competing in the event.

## MENU

A good digestion to you all; and, once more,
I shower a welcome on you. Welcome all.
—*Shakespeare.* HENRY VIII.

### RELISHES

CANAPE DE SAUMON FUME
OLIVES CELERI ANCHOIS
AMANDES SALEES

Of a good beginning
Cometh a good end.
—*Heywood*

### BLUE POINTS

I promptly will descend
and let thee in, and thank thee for the shock.
—*Chandler*

### SOUPS

CONSOMME BRUNOISE
CREME ST. GERMAIN
AIGUILLETTES DE KINGFISH DUGLERE

One thing it were well not to be in.
—*W. J. Bryan*

Famished people must be slowly nursed, and
Fed by spoonfuls, else they always burst.
—*Byron.* DON JUAN

BOUCHEE MONTGLAS

We are such stuff as dreams are made on.
—*Shakespeare*

Let me loose thy tongue with wine.
—*Tennyson*

### ROAST

FILET PIQUE A LA JUDIC
POMMES RISSOLEES
CHOUFLEUR AU GRATIN

What you do
still betters what is done.
—*Shakespeare.* WINTER'S TALE

### SORBET A LA PRUNELLE

Drug the cup, thou butler sweet,
And send the nectar round.
—*Emerson*

PLUVIERS DORES IMPORTES

Thou wast not born for death, immortal bird,
No hungry generations tread thee down.
—*Keats*

### SALADE

Of simples in these groves that grow
He'll learn the perfect skill;
The nature of each herb to know
Which cures and which can kill.
—*Dryden*

### SWEETS

GLACES FANTAISIES GATEAU BRETON

Never did sculptor's dream unfold
A form which marble doth not hold
In its white rock.—*Anon*

(Here shall be sung "The Good Old Summertime.")

FROMAGE

As thy days so shall thy strength be.
—*Psalm*

### FRUITS

Custom calls me to it.
—*Shakespeare*

### CAFE SPECIAL

Doubtless God might have made a better berry,
But doubtless God never did.
—*Potter*

### CIGARS

While I was musing the fire burned.
—*Psalm*

### APOLLINARIS

They eat, they drink, and in communions sweet
Quaff immortality and joy.
—*Milton.* PARADISE LOST

MENU OF THE NATIONAL ASSOCIATION OF AUTOMOBILE MANUFACTURERS' BANQUET, HELD JANUARY, 22.

THE AUTOMOBILE

VOL. X. NO. 5.

Published Every Saturday
by
THE CLASS JOURNAL CO.,
Flatiron Building, Madison Square,
NEW YORK CITY.

Cable Address - - - - Autoland, New York
Long Distance Telephone - 300 18th St., N. Y. City

SUBSCRIPTION RATES:

United States, Canada and Mexico, One Year, $2.00
Other Countries in Postal Union, - One Year, $3.00

To Subscribers—Do not send money by ordinary mail. Remit by Draft, Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Iliffe & Sons, Limited, 3 St. Bride Street, Ludgate Circus, London E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

To Advertisers—Copy or changes in orders for advertisements for the issue of the week following should reach us not later than Saturday.

Copyright, 1904, by The Class Journal Company.

Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly).

SATURDAY, JANUARY 30, 1904.

## SUGGESTED BY THE SHOW.

Showtime. New York is looking backward, Chicago looking forward. From Madison Square to the Coliseum is a long stretch in distance, and yet the day is not so far off when it may be only a third of the way in a chain of national shows that will begin in New York and end in San Francisco. And it is not visionary to picture the attendance at the opening of the Chicago show of a delegation of New York automobilists who have made the trip, not by rail, but in their own cars over the broad National highway that must eventually join the metropolis with the great commercial city by the lakes. And there are many now living who may be able to continue their journey westward to the Pacific slope along the well-kept roadbed that will in time reach from ocean to ocean.

Progress was the feature that stood out most prominently at the Madison Square Show that seemed to electrify the air at the various social gatherings, and that was expressed in those little informal exchanges of thought among manufacturers and users that are one of the pleasantest experiences of show week. In design and construction it was noticeable as never before. At previous shows more radical changes have been seen, wider departures from previous practice. Yet at none has there been manifest a more general appreciation of the higher problems in construction than at the 1904 Garden exhibit.

The mere horseless vehicle has largely disappeared and, in the highest class, may be said to survive only in those electrically-driven vehicles that are intentionally designed to reproduce horse-drawn carriage types. The placing of an engine in a carriage builder's construction has given way to the automobile designed and built by engineers, with a view solely to the mechanical problems involved and freed from the traditions and incongruities of carriage construction. With the increasing use of metal for bodies, guards, and frames, the automobile has practically nothing left in common with the horse-drawn vehicle other than the mere fact of operation on the common highway.

With the showing at Madison Square, the industry as a whole has reason to be gratified, and there is not any danger that this will be followed by the feeling of satisfaction which is fatal to further progress and improvement.

It is now Chicago's turn to command attention and interest and without doubt a notable display will be found in the Coliseum on February 6. The educational value of two such shows in the chief commercial centers of the country is very great. The public is learning its lesson, and those who come to scoff remain to pay. From present indications, sales this year will be enormous. Each buyer will become a missionary for good and so the momentum of what is destined to be a grand national industry will steadily increase.

We have now good machines a plenty. Let the work of making good roads be pushed.

## AUTOMOBILE TERMINOLOGY.

When Professor Frederick R. Hutton, of Columbia University, opened his attack upon the present automobile terminology at the N. A. A. M. banquet, the guests very reasonably supposed that this was a new variety of academic humor. It was soon manifest, however, that the learned speaker took his subject very seriously, even if its effect upon the diners was humorous. Professor Hutton objects to the incorporation in our langauge of such terms as automobile, chauffeur, garage, chassis. He dislikes in particular words borrowed from the French language. To this destructive criticism he adds a list of neologisms to fill the need in our language for terms expressive of automobiling and for which at present there are no equivalents. Therefore to *pell* is suggested to fill a long-felt want for a brief way of saying in the langauge of automobiling, what the horsemen mean when they say to ride or to drive. Variants are suggested to concisely cover other motoring conditions.

It is apparent that the Professor is the possessor not only of an automobile, for he is an enthusiast, but of a red "devil of derivation," as a recent writer has aptly put it. In the words of the same writer, "there are some men who seem incapable of comprehending the fact that it is the present meaning of a word which determines the propriety of its use." Professor Hutton s hatred of the word automobile is caused by the fact that it is bilingual. It is compounded of the Greek word *autos*, meaning self, and the Latin *mobilis*, meaning movable.

Fortunately or unfortunately all automobilists are not philologists, and do not sit up o' nights worrying about the derivation of terms. They do know what the word automobile means and that there is no single term in common acceptance which so readily calls up a mental picture of the self-propelled vehicle. It has received the sanction of hundreds of thousands of educated persons, speaking different tongues. So with other words which we have borrowed from the French in the automobile line. Why not? Have not the French been pioneers in this branch of applied science, and have they not the discoverers and explorers' right to name the hitherto unnamed? What word so well expresses the salaried driver as chauffeur? To follow the example of "coachman" and say "motorman" would be to cause confusion with the drivers of street railway cars. And to offer machine made substitutes savors too much of egotism to find public acceptance.

A word must have something more than purity of origin to become an integral part of the langauge. Like a coin, it must have ready and unanimous acceptance to get into general circulation. In a pure language, like the ancient Irish, for example, the automobilist would have a hard time to make known his wants, and at the other extreme comes modern technical German with its superabundance of machine-made conglomerate words that do not fit the mental alertness of the American mind.

Automobile terminology is without doubt incomplete. In time new terms will be introduced and their acceptance will depend, not on ancestry, but whether or not they fit themselves to American conditions and "fill the bill." Reform is really more immediately needed in the direction of a uniform pronunciation of words adopted from foreign languages—the French especially. This applies also to the names of foreign cars. By some, such terms and names are given the correct foreign pronunciation, by a greater number a bastard pronunciation which is neither American nor European, and a still larger and growing number use a phonetic method. Neither acts of Congress nor desires of individuals can secure immediate uniformity in such matters, however, and, as in all other forms of speech, the best usage will ultimately prevail.

# Vanderbilt Drives a Mile in 39 Seconds.

ORMOND, Fla., Jan. 27.—W. K. Vanderbilt, Jr., today lowered the world's record for a mile, covering the distance with his 90-hp. Mercedes in 39 seconds flat, clipping off 2-5 of a second from the sensational mark set by Henry Ford in his mile on the ice at New Baltimore, Mich. Vanderbilt tried several fast miles yesterday, one of which was caught at 39 by W. Gould Brokaw, who was riding as a passenger in the big Mercedes, but today's mark will stand for a record, as Referee Pardington appointed official timers for the trial. The following sportsmen took the time at the start, W. A. Thompson, H. M. Adams, Alfred Reeves, J. L. McGuinness, and W. T. Leighton, and at the finish the watches were held by A. B. Batchelder, A. D. Proctor Smith and W. H. Hall.

A careful comparison of the eight watches gave the result of 39 seconds for the mile and the time was officially announced at that figure by Referee Pardington. The beach was hard and smooth, with a strong wind favoring the record-breaking trial. After receiving an avalanche of congratulations, Mr. Vanderbilt expressed a hope of making a still lower mark for the mile before the end of the week.

The first heat of the ten-mile race between H. L. Bowden's and S. B. Stevens' 60-hp. Mercedes resulted in a performance almost as sensational as the mile by Mr. Vanderbilt. The winner, Mr. Bowden, covered the distance in 10 m. 18 sec., which is world's record for the distance, each mile being negotiated in almost 5 seconds less than Augier's record on the Dourdan course, which stood for world's record until Henry Ford's mile on the ice.

The fifteen-mile race for the $500 Shanley-Brokaw Cup between B. M. Shanley's 40-hp. Decauville and W. Gould Brokaw's 40-hp. Renault resulted in two straight heats being won by the latter. The first heat was not officially timed, but was allowed to stand; the second heat was clocked by the Mors timing device in 12 m. 51 4-5 sec. M. G. Birnin drove the Renault and E. Fredericks the Decauville.

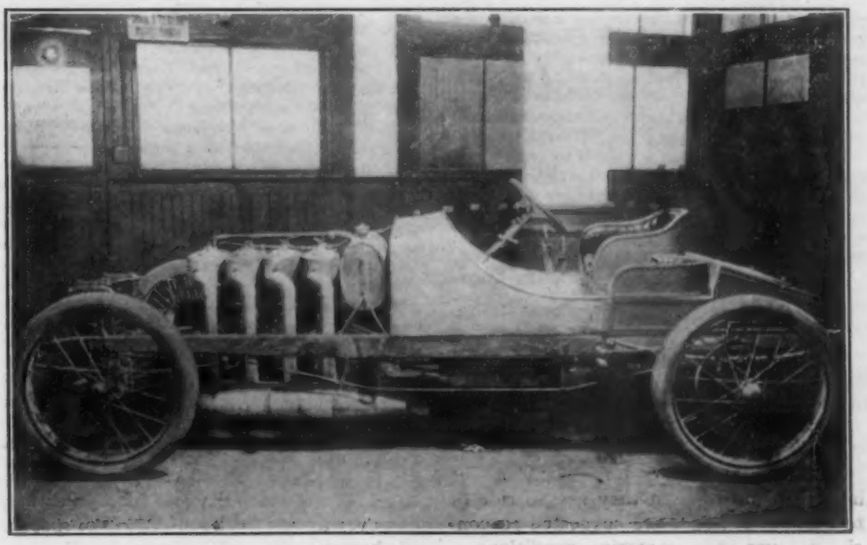
---

Immediately following the close of the New York Automobile Show on Saturday night, the rush of automobilists to the Florida races commenced, some of the enthusiasts leaving on the midnight express Saturday night, within an hour after the doors of the exhibition had closed. The Florida limited train of the Seaboard Air Line leaving on Monday carried a party of forty-four automobilists, including most of the officials and a number of competitors in the events. Among the number were Chairman A. R. Pardington of the Racing Board of the A. A. A., Secretary C. H. Gillette of the same organization, and Mrs. Gillette; Secretary S. M. Butler of the Automobile Club of America and Mrs. Butler; Mr. and Mrs. Augustus Post, Mr. and Mrs. A. L. Riker, George P. Tangeman, Frederick Church, A. G. Batchelder and A. D. Proctor Smith of New York, Mr. and Mrs. Emerson Brooks and B. M. Shanley of Newark, William P. Thaw of Pittsburg and M. Lamberjack, M. Bertram and M. Roquet of Paris.

About the same number left over the Southern Railway on Sunday, the party including Alfred Reeves, F. E. Spooner and several other newspaper men. Another large party left over the Southern road on Monday, including President W. E. Scarritt of the Automobile Club of America and a party of members of that organization, W. C. Jayne of the Buffalo Automobile Club and a party of about twenty up-State automobilists, Norris Nason and others. Mr. and Mrs. Howard Gould also took down a party in a private car.

Considerable comment has been made of the freight and express charges for shipping cars to Ormond, a stiff differential from Jacksonville bringing the rate up to a rather high figure, so that midwinter automobile racing may be said to be a luxury when the events take place some thousand and odd miles from home.

The 60-horsepower four-cylinder Bayard which is being used this week by Lamberjack in the races at Daytona, is the highest powered car turned out from the Levallois factory of A. Clément. Cylinder dimensions are not available, but the engine is an enlarged copy of the regular four-cylinder motor used on the standard Bayard cars. The wheelbase is extra long, and the body is hung low to give stability on curves. A transmission giving four speeds and reverse is fitted with direct drive on fourth speed, the usual propeller shaft driving to bevel gears on the live rear axle.



CLEMENT 60-H.P. IN USE BY LAMBERJACK IN FLORIDA.

## GOV. ODELL OPPOSES LARGE HIGHWAY APPROPRIATION FOR NEW YORK.

ALBANY, Jan. 27.—Governor Odell created keen disappointment among the delegates to the annual convention of road supervisors of New York State which closed its sessions today, by announcing, in reply to an address by Ira P. Cribb of Canandaigua, urging the Governor to lend his influence to the plan to obtain an appropriation of $2,000,000 for State highway improvement this year, that such a sum could not be appropriated without having recourse to the direct taxation of land. He thought, however, that the State was at a point where $1,000,000 might be devoted to the purpose without direct tax, but the heavy inroads into the public resources made by the $101,000,000 barge canal bonding legislation made the proposed $50,000,000 road improvement bonding scheme favored by the convention premature, owing to the passage of the canal legislation.

"There is perhaps a misunderstanding in the minds of many in reference to this good roads proposition," said Governor Odell. "We should understand that outside of the building of new roads, which is gradually giving to the State of New York an improved system of highways, this commonwealth is also aided in other directions; that is, while the improvement of highways and the rebuilding of roads is going on, those localities which through desire or inability to take advantage of the broader scope of the good roads law, are aided by a 50 per cent. contribution from the State in repairing their roads.

"The original so-called Fuller law did not accomplish all of the results desired, but the Plank amendment has produced most gratifying results in almost every locality. Beginning with an appropriation of scarcely $30,000, the State last year appropriated nearly $260,000, and this year between $350,000, and $400,000 will be required to carry out the provisions of that law."

# Annual Reunion of the Club.

## Good Roads the Keynote of Forceful Addresses at the Banquet of the Automobile Club of America.

Good fellowship, a good dinner and good speakers, both witty and grave, made a combination at the annual banquet of the Automobile Club of America, that will live in the memory of the members and their friends. This annual function has grown in importance until it has become a brilliant feature of the winter's public dinners in the Metropolis.

The Committee of Management had devised a surprise in the decoration of the magnificent ballroom at the Waldorf-Astoria, where the banquet was held last Saturday night. The entire interior had been converted into an arbor, with palms, flowers and festoons of greenery, picked out with pretty blossoms. At one end of the room there hung a model of the Airship with which M. Santos Dumont—who was one of the guests—expects to fly away with the purse in the coming St. Louis Fair aeronautical contest.

At the speaker's table, Winthrop E. Scarritt, president of the club, was in the toastmaster's place, and at either side of him sat Senator Jacob Gallinger, A. L. Lattimer, W. P. Brownlow, Franklin S. Murphy, Gage E Tarbell, Simeon Ford, James B Dill, Col. John Jacob Astor, Thomas A. Edison, Alberto Santos Dumont John A. Farson, Henry Rogers Winthrop, William H. Hotchkiss, J. H. Gaskill, Julian A. Chase, Milton J. Budlong, Col. Albert A. Pope, Henry M. Scovel, Martin Dodge, William T. Boyle, James M. McDonald.

In all the speeches the dominant note sounded road improvement.

In introducing the serious side of the entertainment, Toastmaster W. E Scarritt, said:

The Automobile Club of America stands for three things: good roads, good law and good behavior. The automobile is the last word of engineering skill. Yesterday it was the plaything of a few, today, it is a servant of the many, tomorrow it will be the necessity of humanity.

Did it ever occur to you that since the dawn of history until the birth of the automobile there had been absolutely no advance in means of transportation for the individual. Pharoah's horses were just as noble and his chariot finer than any we see today on Fifth Avenue. The horse-drawn carriage of the first Napoleon was just as gorgeous and efficient as are to be seen on the Champs de Elysée. The fact that remains, that, eliminating the motor car, the individual is no better off and has no better or different means of traveling from one point to another than he had in the days of Christopher Columbus or George Washington, therefore, the automobile means (and every one of its separate letters deserves to be written a capital) that the gods of the ancients steam and electricity, have at last been harnessed to our individual carriage, and that the individual is emancipated from his serfdom to the earth. But what is the self-propelled vehicle to do for us? Its mission is so large that we cannot begin to catalogue the blessings in its train.

It is to solve the problem of congested traffic in our city streets. If every horse-drawn vehicle in New York could be replaced by a motor car, what would that mean? First, that the space now occupied by horses would be saved. Second, that the streets would be clean. (Applause.) Third, the motor car would carry twice the load at double the speed. This would be equivalent to having clean streets four times the width of our present streets. If ever there was a city under the sun with narrow, congested uptorn streets that needed salvation from itself, surely it is our Metropolis.

The public do not know, they cannot appreciate that the self-propelled vehicle is to solve the great problem of over-congested traffic in our streets. However, it is true, and the day of our emancipation draweth nigh. Education will take the place of ignorance, superstition and over-conservatism. The practical American mind will awake to the situation and then the deed will be accomplished. The two factors not yet solved in the automobile problem are cost of maintenance and the reliability or unreliability of the vehicle.

Jacob A Gallinger, United States Senator from New Hampshire, spoke a word about good roads:

Now a word as to good roads: Why shouldn't the general government aid the States and the towns in building good roads in this great country of ours? (Applause.) The constitutional argument in reference to these matters has been relegated to the limbo of forgotten things, and now we are making liberal appropriations for all great public works for the deepening of our harbors for the improvement of our rivers, and for doing everything that is necessary to increase the commerce and the business of the United States. Sometimes we go too far, possibly, in this direction.

I recall to mind the fact that in the River and Harbor Bill that the Senator from Montana talked to death two or three years ago, that there was an appropriation of a million dollars to improve a river down in the State of Texas, one provision of which was that we should build artesian wells to pump water into the stream. (Laughter.) Why, we have made appropriations for streams in the United States that ought to have been macadamized and made a playground for the automobilist. I say in some respects we have gone too far in that direction. A recent illustration of the legitimate use of the public money, because it will benefit the great south of this land, was an appropriation made a few days ago of $500,000 to exterminate the little insect that is destroying the cotton crop of the United States. Why not then, I say, an appropriation from the public treasury for the purpose of building good roads in the United States?

I am for good roads and I shall count it a great privilege to be permitted, as the representative of a generous and progressive people, to vote, if I have an opportunity, for a liberal appropriation from the public treasury for the purpose of aiding the towns, the cities and the States of this Union in procuring better roads than they have at the present time.

(Prolonged applause and cries of "Hear! Hear!").

In my opinion, all that is needed to bring about that result is for you to work in conjunction with the men in the national legislature who have this matter at heart; all it needs is a long pull, a strong pull, and a pull altogether, and what we are hoping for will become an accomplished fact in the near future.

Senator A. C. Lattimer of South Carolina declared that "No civilized country today has had the benefit of good roads where the federal government has withheld its aid and control." In the course of his after-dinner talk, he also said:

The heaviest tax that the American people pay today is the mud tax. Why have we not changed this miserable condition that exists from one end of the country to the other? It is for the want of organization. The individual citizen realizes that he cannot compass and master this great problem. This individual State cannot do it. It takes the combined effort of the American people, just as it has taken in every civilized country, the combined effort of the Government to accomplish the great results that we all long to see in this grand country of ours.

It costs in America one billion of dollars per annum to transfer our farm products and our building material over the roads; 25 cents per ton per mile is the estimate of transporting over the common roads of our country. If we can macadamize our roads we can reduce the cost of transportation at least one-half, thereby saving $500,000,000 per annum in the cost of transporting the product of the farms and building materials over the dirt roads.

It is estimated that we have 16,000,000 farm animals in America. If we had a magnificent system of macadam roads we could save at least 2,000,000 of these animals. The cost of maintaining them is at least $156,000,000, and the cost of the animals $140,000,000, making $296,000,000 per year. Add that to the cost of transporting, and the wear and tear of the vehicles, the harness, and the time consumed in moving through these muddy roads, and enough money in one year can be saved to the American people to macadamize every road in the country. (Applause.)

Gage E. Tarbell, vice-president of the Equitable Life Assurance Society, spoke from an insurance point of view and added a word of encouragement to the good roads advocates. In the course of his ten minutes' talk, he said:

When the public first began to buy automobiles and intrust their precious lives to them, and a few were injudicious enough to be injured or killed, there was a hue and cry to the effect that automobiling was an extra hazardous occupation, and there was very serious consideration as to whether to exclude them altogether from our folds or merely to charge them an extra premium to cover the extra risk.

We soon found that we were in danger of putting the extra charge in the wrong place; that if we wanted to get at the real root of the evil, we'd have to put the extra on the people at large—"hoi polloi"—the pedestrians who are gathered under the wheels of the Juggernaut, and we gave it up as hopeless, and accepted automobilists just as we would any other ordinary individual—with an injunction to be good.

Not only has time proved the wisdom of our action but we are now considering putting confirmed automobilists in a preferred class, with extra dividends, because the open air life that they lead has proved their emancipation from nearly all of the ills that life insurance doctors fear, and bids fair to establish a new era of longevity and a return to primitive health. I predict that if everybody could have an automobile and time to use it we would have no further use for doctors—surgeons would be all that would be required

Only recently the people of New York voted a hundred millions for the building of a barge canal from Albany to Buffalo—one hundred millions! And that is only the beginning. The Lord only knows what the end will be. Everything indicates that our great nation is about to enter upon the task of building the Panama Canal.

Now when there are hundreds of citizens in both State and Nation interested in good roads to one that is interested in canals, what, I ask you, should our State and Nation be expected to do in the matter of improving our highways? There should be no hesitation on the part of any representative in Albany in supporting the measure to expend five millions of dollars annually for the next ten years for this purpose, nor on the part of our representatives in Congress in supporting the Brownlow bill appropriating twenty-four millions, or even twice that amount, in building national highways!

In a recent trip that I made through France and Switzerland, nothing impressed me more than their magnificent highways. Think of the hundreds, yes thousands of our citizens who annually tour these countries, attracted by their superb roads. I do not wish to pose as a prophet, but I am not afraid to say that if this great country of ours could have such roads as they have over there, the tide of sightseeing would turn the other way.

I maintain that owners of horses ought to be just as willing to break their horses to automobiles as they have been to break them to trolley and steam engines. They know that trolleys and steam engines are permanent and necessary things, and they will learn that the automobile is here to stay also.

We will keep them both: the horse for an invigorating drive in the park or a quiet saunter through country lane with wife or sweetheart, and the automobile for its own peculiar uses, its wider scope.

Simeon Ford, who has the peculiar knack of roasting his hearers in such a humorous way that roars of laughter give consent said:

I feel somewhat embarrassed at being here again this year, and feel it due to myself to state that I did not come without a violent struggle. The seventy-horsepower gasoline chairman of your committee on chin-music, came and camped in my office, and as he is not provided with a muffler, I finally made up my mind it was better to sacrifice my convictions rather than my eardrums, and so, "Saying I would ne'er consent, consented."

Not but what I am flattered at being asked to address so distinguished a gathering of millionaires—(I do not use the term in an offensive sense, but I know from experience that only us millionaires can be automobilists)—but I told you last year everything I knew about automobiling and a good deal I didn't know, and this year I have nothing left to say and I will now proceed to say it.

Some people think it's a cinch to be up here among the wax-works, trying to look the part, and getting free food, and drink, so-called. The head table is usually adorned by men who are asked to speak and don't want to, and men who want to speak and aren't asked to, so that all hands are miserable. We are all entitled to sympathy but only get envy.

Those of you who were sufficiently in possession of your faculties at the time, may remember that last year I described a ten jackass-power, lobster-colored creation which, in a moment of temporary aberration of mind, I paid out my good money for. It was described in the advertisement as a smooth, swift, silent and powerful vehicle, so simple in its mechanism that a babe in arms could easily manipulate it. The only thing smooth about it was the fellow that wrote the advertisement, and the only thing easy about it was the gifted orator who is now addressing you.

You will be pleased to learn that I have that machine still, although it 's no fault of mine. The only original part of it remaining is the horn. I haven't had to use that much. I don't believe in blowing my own horn. I only use it when there is imminent danger of somebody running into me from astern, and to keep cows from jumping into the tonneau and biting me.

Well, as I remarked, with all its faults I have it still. I have tried in vain to dispose of it at private sale, by public auction, by trade, gift, raffle, grab-bag and fish-pond. I have left it by the roadside, unattended, for long periods, hoping some poor fool would come and steal it. I have freely tendered it to friends, enemies, relatives, old ladies' homes, poorhouses, gold cures and lunatic asylums, and it has always been refused with scorn and vituperation. It cleaveth unto me like a porous plaster, and like the Old Man of the Sea, it is impossible to shake, and so I am still compelled to figure it among my liabilities, and have come to regard it in the light of a penance for my sins.

And yet there have been moments—rare moments when I have experienced the keenest delight from its use. Sometimes, when it has been returned to me, fresh from the factory, having been entirely reconstructed, and I have succeeded in getting my wife to join me in putting another mortgage on our humble home, it has run smoothly and swiftly for several moments, before disintegrating. At such times I have experienced an exhilaration such as the bird must feel, when, with motionless wing it drops with lightning speed earthward from the far heights of the blue empyrean. And then a town constable steps out from behind a telegraph pole and hales me to the nearest magistrate and I have to give up twenty.

The constable swears that I was running at least seventy miles an hour and had been constantly so doing for weeks, despite frequent warnings; that when arrested I was completely surrounded by school houses, places of worship, postoffices and colored orphan asylums; and that the entire landscape was smeared with signs forbidding automobilists to proceed at a rate of over one mile an hour. Before he gets through I begin to think I am Barney Oldfield on Bullet No. 2.

I then swear on a stack of Bibles that my machine is incapable of attaining a speed of over eight miles an hour, that I was running at the time on the hill-climbing gear, with both brakes on, that my gas was cut off and was mighty poor gas at that, that my spark was working on half time, that my oil was all gummed up, and that I was riding behind a funeral procession and was having difficulty in keeping up. My chauffeur and guests also perjure themselves. But nobody ever believes an automobilist. I don't myself—and so the magistrate, licking his chops, soaks it to me, for the country magistrate, like death, "loves a shining mark."

I was pleased to note at the show, that we are beginning to build better motors. It is a shame that we, a nation of mechanics, should allow ourselves to be outbuilt by the French and Germans.

We have been building too cheap. Unless a motor is very good, it is no good. Our makers have been turning out lovely cars, glittering with paint, varnish and brass and fitted up as luxuriously as Cleopatra's barge. And then if they had any money left, they would conceal a cute little engine somewhere about—a kind of cross between a cuckoo-clock and an ice-cream freezer, with the vices of each and the virtues of neither. What is the use of a body fitted out in the style of Louis Quinze when the cylinders are made in the style of tomato cans? As soon as these feeble anemic motors get warmed up, the lead bushings dissolve in tears and the lead gears gnash their teeth and disintegrate, and with a gasp and a gurgle the poor little engine goes out of business. And all because we are trying department-store bargain-counter, marked-down-from-meet-me-at-the-fountain methods.

I tell you the best is none too good, and if a man can't afford a good one, he can afford to wait until he can afford a good one.

Representative W H. Brownlow, the foremost champion in Congress of the good roads movement, agreed in favor of government appropriations for the work. If the United States spent hundreds of millions in the betterment of rivers and harbors it was reasonable to expect an adequate expenditure for road improvements in the interior of the country. He urged personal effort, and suggested that every automobilist write to the representative from his district and the senators from his State in Congress asking active coöperation in the good roads work.

Automobile legislation was the topic assigned to James B. Dill. He said that he had been led to the conclusion that the foundation of good legislation is the good behavior of the automobilist, and that automobile legislation is rarely initiated by a political party machine. By way of illustration he cited the drastic Pennsylvania law, which was due almost entirely to the reckless use of a car by a single automobilist in that State. Continuing, he said:

Upon the conduct of the operator of the road machine depends the conduct of the operator of the political machine in dealing with the regulation of the road machine. To procure just and reasonable legislation, to avoid unduly restrictive and even penalizing enactments by the Legislature, we must look to the creation of pro-automobile public opinion, based, and deservedly based, upon a proper respect for the rights and even the weaknesses of the other users of the highways.

The history of automobile legislation is that of vindictive enactments. Fines and imprisonments for automobilists are the avowed end and aim of most automobile legislation.

Automobilists as a class, may as well get right at the root of the matter and recognize the fact that the real opponent of automobiling is not the legislator nor the lawmaker, but is the exception to be found in their own ranks who disregard the rights, courtesies and weaknesses of other users of the road. The suppression of this man would tend more to procure good legislation than the efforts of many legislative committees.

Colonel Albert A. Pope, whose interest in machines and good roads antedates the automobile, replied to Simeon Ford's humorous narrative of difficulties by saying that the manufacturer had troubles of his own. More money had been sunk in the effort to produce a good car than had been made out of the sale of cars. Continuing he said:

This is a new art; a new industry. It is wonderful what has been accomplished; and some of these men who have got money, inherited from their fathers (laughter) want to buy foreign machines because they can pay so much more for them. (Laughter and applause). Now, then, I don't want to do any harm to the importers who are bringing machines over, but the American manufacturers have got brains and capacity and mechanics such as are nowhere else in this world. The time has come when the American manufacturer can produce a machine that is equal to any made anywhere in this world.

Some people think that we have made a great start in this business. It is only a small start. There are today, perhaps, one hundred makers of automobiles. How many makers do you think there are in the United States of wagons and carriages? Four thousand makers of wagons and carriages, and now here comes this new means of locomotion, which is bound to supersede the wagons drawn by horses. There are persons within the sound of my voice who will live to see the day when horses in the city of New York will be mighty few, and I believe that the time will come when horses will be excluded from our streets.

Some of the speakers have said that we have just begun to do something for the roads, but what have we been doing in Massachusetts? Look at the streets in Massachusetts. Ten years ago a bill passed the Legislature for an appropriation of $600,000, and each year $600,000 has been appropriated and the State pays one-half for the highway and the town and county pays one half, and each year the towns and counties ask for three to six times more than the State can appropriate. So then we are building highways in Massachusetts, and within ten years you can take your automobile and you can go from one town to another over highways as good as any in the civilized world.

We want laws that are as fair to the man who drives the horse as to the man who drives the automobile. Are there not plenty of ignorant men who drive horses through our streets who do not know how to drive, just as some careless men drive automobiles? And let me say to you gentlemen, stand by your chauffeur, make him do his duty, and if he doesn't do his duty don't do him. If he violates the law discharge him. There are plenty of men being trained by the manufacturers who want to be chauffeurs.

When you get into the country and have a mile of clear road with no one on it, why shouldn't we drive our automobile as fast as we want to? But when we are in the traffic of the city then we should go slowly and should not interfere with anybody and should not hurt anybody and should be considerate.

Among those present were:

James W. Abbott, Dr. Calvin T. Adams, George B. Adams, Louis R. Alberger, Russel A. Alger, Jr., Cecil Allen, A. A. Anderson, Maj. James M. Andrews, George W. Arthur, John Aspinwall, Frank C. Armstrong.

Jules S. Bache, W. H. Baker, Frank H. Ball, Arthur L. Banker, Geo. A. Banker, Amzi L. Barber, F. W. Barker, Clarence W. Barron, Dr. Herman B. Baruch, William G. Bee, M. M. Belding, Jr., Eugene S. Benjamin, L. C. Benton, Colvis Bertrand, Hart O. Berg, E. T. Birdsall, Cortlandt F. Bishop, Gustave Bissing, John V. Black, John A. Black, John E. Bleekman, Peter Bodine, Hon. Edward A. Bond, Nelson Borland, Frederick G. Bourne, Arthur Keeler Bourne, S. V. Bowman, E. C. Bradley, G. J. Bradley, Curtis P. Brady, Nicholas F. Brady, Daniel M. Brady, Clifford V. Brokaw, Emerson Brooks, George M. Brown, H. K. Browning, Wm. H. Browning, C. F. Bryant, J. S. Bunting, S. M. Butler, Winslow E. Buzby.

George C. Cannon, Dr. S. H. Carney, Jr., Herbert S. Carpenter, Louis Cassier, A. H. Chadbourne, Geo. F. Chamberlin, Dr. P. F. Chambers, M. D. Chapman, E. R. Chapman, C. L. Charley, Evan Chipman, A. W. Church, Charles T. Clifford, Dr. B. I. Cobleigh, Fred B. Cochran, G. D. Cochran, M.D., George Coggill, Otto B. Cole, P. F. Collier, A. W. Comstock, Roland R. Conklin, Cesare Conti, H. Content, John Cooper, William Corliss, Walter Cox Henry C. Cryder, Herman F. Cuntz.

Samuel T. Davis, Jr., George H. Day, J. W. deAgnero, Philip T. Dodge, Fred Doremus, Cap't F. R. Drake, C. A. Duerr, Wm. N. Dykman.

Arthur J. Eddy, Charles L. Edey, Frank R. Edwards. Frank A. Egan, M. O. Eldridge, Frederick H. Elliott, Harry S. Elliott, Stewart H. Elliott, William D. Ellis, Lawrence E. Embree, Frank Eveland, Harry J. Everall.

Peter Fogarty, Joseph Freeman.

Edward B. Gallaher, Frank S. Gannon, William D. Gash, T. L. Gaskill, Charles G. Gates, Rev. Milo H. Gates, Howard Gibbs, George J. Gillespie, M. Gillet Gill, Sully Gillett, C. H. Gillette, Frederick Glassup, Charles J. Glidden, Robert Walton Goelet, William C. Gotshall, M. M. Graham, F. W. Graves, R. A. Greene, L. H. Greenwood, Ernest Groesbeck.

William A. Hall. Clarence M. Hamilton. Howard S. Hart, Frank W. Haskell, L. C. Haskell, John F. Havemeyer, Allan R. Hawley, William Hawley, Capt. Homer W. Hedge, John A. Hill. J. M. Hill, Wm. S. Hilles, E. Rand Hollander. T. C. Hollander, Colgate Hoyt, H. M. Hubbell.

Arthur Iselin.

Dr. Ion A. Jackson, Alfred Jaretski, R. E. Jarrige, J. MacIntyre Jaycox, W. C. Johnson, Walter H. Johnson. M. P. Jones, W. T. Jones.

J. C. Kerrison, Ernest G. King, John A. Kingman, W. H. Kirkpatrick, L. H. Kittredge, E. J. Knabe, Jr., Julius G. Kugelman.

Paul LaCroix, I. Gifford Ladd, Frederick M. Lande, F. A. LaRoche, Kirke LaShelle, Dominique Lamberjaque, J. M. Lansden, G. Howland Leavitt, E. C. Lee, S. K. Lichtenstein, H. R. Lounsbery, Jr., George Lowther, Dr. J. Grant Lyman.

George MacDonald, E. McKittrick, Alden L. McMurtry. Geo. E. McQuesten, C. R. Mabley, James Macnaughtan. Geo. H. Macy, Everit V. Macy, J. N. Marshall, T. C. Martin, Norris N. Mason, A. Massenat, C. P. Matheson, Armitage Mathews, Dr. Chas. H. May, Marquis Mazzacoratti. A. E. Miller, Charles E. Miller, John Monks. Jr., W. J. P. Moore, L. P. Mooers, R. Lee Morrell, Dave H. Morris, Dr. Lewis Morris, Frank A. Munsey, William N. Murray.

Carleton W. Nason, A. R. Neeb, Truman H. Newberry, Edward C. Newcomb, James E. Nichols, William W. Niles, Lewis Nixon, Geo. F. Norton, Wm. P. Norton.

Raymond M. Owen.

A. R. Pardington, W. H. Page, Jr., H. C. Palmer, Henry U. Palmer, E. H. Parkhurst, Hon. Herbert Parsons, Howland Pell-Haggerty, R. H. Pettigrew, H. C. Phillips, John A. Pinard, Will R. Pitman, John P. Plummer, Jr., James Madison Porter, Clarence A. Postley, E. L. Powers.

C. Quincy.

George J. Raymond, Howard Riegel, Frank W. Richards, John B. Richards, O. L. Richard, Rev. Alban Richey. A. L. Riker, W. J. Riker, Sidney Dillon Ripley, Milton C. Roach, Isaac R. Robinson, John T. Robinson, Frederick Preston Rose. A. W. Rossiter, Walter C. Runyon, E. W. Runyon, E. P. Russell, Dr. P. L. D. Rust.

L. J. Sackett, Andrew Saks, Henry, Sanderson. W. D. Sargent, E. E. Schwarzkopf, Robert P. Scott, Hon. Samuel Seabury, Dr. Harry H. Seabrook, Frank Seaman, Jefferson Seligman, Wm. C. Shanley, Albert R. Shattuck. Royal R. Sheldon, G. O. Shields, Geo. N. Sidenberg, E. DeForest Simmons, Angus Sinclair, A. J. Singer, Kenneth A. Skinner, R. A. C. Smith, A. D. Proctor Smith, C. Johnston Smith, Wilson R. Smith, C. G. Somerville, A. W. Stanley, Edward A. Stern, Benjamin Stern. Tom Stockholm, H. M. Swetland.

C. H. Tangeman, Charles L. Taylor, Samuel W. Taylor, Henry R. Taylor, Frederick R. Tibbetts, I. C. Treat, John B. Trevor.

Samuel H. Valentine, C. M. Van Tassell, Philip VanVolkenburgh, Marion J. Verdery, Rev. Dr. Wm. H. Vibbert, Henry Vilcoq.

E Richard Walter, David S. Walker, John Brisben Walker Justin C. Walker, James M. Waters. Frank G. Webb, Alfred Weed, W. Pierpont White, A. H. Whiting, Edward G. Whitaker, E. Milton Wiley, Louis Wiley, Harrison Williams, Henry Wollman, O. J. Woodard, Dr. W. E. Woodend, James E. Woodbridge, H. S. Woodworth. Lorimer J. Worden. C. C. Worthington, H. Rossiter Worthington, C. G. Wridgway.

# Exhibitors at the Chicago Show.

In the following list those exhibitors who had no displays at Madison Square Garden are printed in italics.

AUTOMOBILES.

Autocar Co., Ardmore, Pa.
Apperson Bros. Automobile Co., Kokomo, Ind.
American Darracq Automobile Co., New York.
*Austin Automobile Co.*, Grand Rapids, Mich.
*Auburn Automobile Co.*, Auburn, Ind.
*Burtt Mfg. Co.*, Kalamazoo, Mich.
*Bartholomew Co.*, Peoria, Ill.
Cadillac Automobile Co. Detroit.
Crest Mfg. Co., Cambridge, Mass.
Columbus Motor Vehicle Co., Columbus, O.
*Chelsea Automobile Co.*, Chelsea, Mich.
*Chicago Motocycle Co.*, Chicago.
Dawson, J. H., Machinery Co., Chicago.
Duryea Power Co., Reading, Pa.
Eisenhuth Horseless Vehicle Co., Middletown, Conn.
Electric Vehicle Co., Hartford, Conn.
Elmore Mfg. Co., Clyde, O.
Ford Motor Co., Detroit, Mich.
Fredonia Mfg. Co., Youngstown, O.
Franklin, H. H., Mfg. Co., Syracuse, N. Y.
Haynes-Apperson Co., Kokomo, Ind.
Holley Motor Co., Bradford, Pa.
*Hammer-Sommer Automobile Carriage Co.*, Detroit.
*Holson Motor Patents Co.*, Grand Rapids, Mich.
Jeffery, Thos. B., & Co., Kenosha, Wis.
Jones-Corbin Auto Co., 31st and Chestnut Sts, Philadelphia, Pa.
Knox Automobile Co., Springfield, Mass.
Kirk Mfg. Co., Toledo, O.
Locomobile Co. of America, Bridgeport, Conn.
*Mitchell Motor Works*, Racine, Wis.
*Marble-Swift Automobile Co.*, Chicago.
*Mead Cycle Co.*, Chicago.
Model Gas Engine Co., Auburn, Ind.
Northern Mfg. Co., Detroit.
National Motor Vehicle Co., Indianapolis.
Olds Motor Works, Detroit.
Pierce, Geo. N., Co., Buffalo.
Packard Motor Car Co., Detroit.
Peerless Motor Car Co., Lisbon St., Cleveland.
*Premier Motor Mfg. Co.*, Indianapolis.
Pope Motor Car Co., New York.
Regas Automobile Co., Rochester.
Reid Mfg. Co., Detroit.
Royal Motor Car Co., Cleveland.
Rodgers & Co., Columbus, O.
*Rothschild & Co.*, Chicago.
Studebaker Bros. Mfg. Co., South Bend, Ind.
*St. Louis Motor Carriage Co.*, St. Louis, Mo.
Stearns, F. B., Co., Cleveland.
Sandusky Automobile Co., Sandusky, O.
Sintz Gas Engine Co., Detroit.
Stevens, J., Arms & Tool Co., Chicopee Falls, Mass.
*Synnestvedt Vehicle Co.*, Pittsburg, Pa.
*Sullivan, Roger J. & Co.*, Detroit.
Temple, Ralph, & Austrian Co., 243 Wabash Ave., Chicago. Ill.
Thomas, E. R., Motor Co., 1200 Niagara St. Buffalo, N. Y.
*Tincher, T. L.*, Chicago.
Winton Motor Carriage Co., Cleveland.
Woods Motor Vehicle Co., Chicago.
White Sewing Machine Co., Cleveland.
*Waterloo Gas Engine Co.*, Waterloo, Iowa.
Waltham Mfg. Co., Waltham, Mass.

ACCESSORIES.

American Ball Bearing Co., Cleveland.
American Coil Co., West Somerville, Mass.
*Aurora Automatic Machinery Co.*, Aurora, Ill.
*Autocar Equipment Co.*, Chicago.
*American Roller Bearing Co.*, Boston.
Brennan Motor Co., Syracuse, N. Y.
Briscoe Mfg. Co., Detroit.
*Byrne, Kingston & Co.*, Kokomo, Ind.
B—O. K. Tire Co., Chicago.
Barton Boiler Co., Chicago.
Bowser, S. F., & Co., Ft. Wayne, Ind.
*Beecher, Chas. H.*, St. Louis, Mo.
*Brandenburg Bros. & Alliger*, Chicago.
Badger Brass Mfg. Co., Kenosha, Wis.
Brown-Lipe Gear Co., Syracuse, N. Y.
Baldwin Chain & Mfg. Co., Worcester Mass.
*Cullman Wheel Co.*, Chicago.
*Columbus Brass Co.*, Columbus, O.
Continental Caoutchouc Co., New York.
*Chicago Rawhide Co.*, Chicago.
*Cleveland-Canton Spring Co.* Canton, O.
Detroit Motor Works, Detroit.
Dasey, P. J., Co., Chicago.
Dasey, P. J., Milwaukee, Wis.
Dayton Electrical Mfg. Co., Dayton, O.
Diamond Rubber Co., Arkon, O.
Electric Contract Co., New York.
*Flint Upholstering Co.*, Flint, Mich.
Funke, A. H., New York.
Fawkes Rubber Co., New York.
Federal Mfg. Co., Ceveland.
Fisk Rubber Co., Chicopee Falls, Mass.
Gray & Davis, Amesbury, Mass.
Goodrich, B. F., Co., Akron, O.
G & J Tire Co., Indianapolis.
Goodyear Tire & Rubber Co., Akron, O.
Hine-Watt Mfg. Co., Chicago.
*Hussey Drop Forging & Mfg. Co.*, Cleveland.
Hyatt Roller Bearing Co., Harrison, N. J.
Hendee Mfg. Co., Springfield, Mass.
Hartford Rubber Works Co., Hartford, Conn.
*Kaestner, Chas., Mfg. Co.*, Chicago.
*Motsinger Device Mfg. Co.*, Pendleton, Ind.
*Motor Car Supply Co.*, Chicago.
*Miller-Knoblock Electric Mfg. Co.*, South Bend, Ind.
*Manhattan Storage Co.*, New York.
*McCord & Co.*, Chicago,
Morgan & Wright, Chicago.
*Moore, Frank L.*, Whiting Foundry Equipment Co., Harvey, Ill.
Midgley Mfg. Co., Columbus, O.
*Northwestern Storage Battery Co.*, Chicago.
National Carbon Co., Cleveland.
*National Sewing Machine Co.*, Belvidere, Ill.
*Pittsburgh Reduction Co.*, Pittsburg, Pa.
*Peterson & Draper*, Chicago.
Pope Mfg. Co., New York.
Rose Mfg. Co., Philadelphia.
*Remy Electric Co.*, Anderson, Ind.
Richmond Mfg. Co., Richmond, Ind.
*Rockaway Auto. Co.*, Rockaway, N. J.
Splitdorf, C. F., New York.
Shelby Steel Tube Co., Pittsburg.
*Steel Ball Co.*, Chicago.
*Standard Carriage Lamp Co.*, Chicago.
Timken Roller Bearing Axle Co., Canton, O.
*Tennant Auto Tire Co.*, Springfield, O.
Twentieth Century Mfg. Co., New York.
Veeder Mfg. Co., Hartford.
Varley Duplex Magnet Co., Providence, R. I.
Whalebone Rubber Co., New York.
Warner Gear Co., Muncie, Ind.
Western Motor Co., Logansport, Ind.
Wagner Cycle Co., St. Paul, Minn.

# Opening of the Philadelphia Show.

PHILADELPHIA, Jan. 25.—Promptly on the stroke of 2 o'clock this afternoon the annual Philadelphia Automobile Show was opened with an overture by the band. The musicians seemed to be about the only ones prepared for the event, unreadiness being apparent on every hand. The aisles were littered with boxes, packed and unpacked, electricians' materials, automobiles waiting to be installed, step-ladders and the various *impedimenta* inseparable from the opening of an exhibition of the kind. Even programs could not be had. The crowd, however, seemed to take great interest in the efforts of the many belated exhibitors to get their material into shape; so no one complained but the few fortunate—or unfortunate—ones who had taken time by the forelock and had put in Saturday and Sunday in decorative work. They stood around and criticized the dilatoriness of the others.

The slow ones were the victims of circumstances. The managers of the show, Messrs. Schlichter and Le Cato, had induced quite a number of exhibitors at the Madison Square Garden show to bring their exhibits over here *en bloc*, and had provided a special freight train of twenty-five cars to expedite matters. Unforeseen obstacles delayed the departure of the train from Jersey City, and as a result, the exhibit did not reach town until a short time before the show was scheduled to open. When they did arrive, however, the expedition with which the vehicles were unloaded from the cars and towed or run under their own power down Broad Street was decidedly encouraging. Appearances at noon indicated a decidedly meagre show; but by 4 o'clock it became evident that the present show will far outclass any of the previous local exhibitions so far as the number of cars exhibited is concerned.

It was long after the supper hour—many of the exhibitors, by the way, were compelled to forego that important function—before it was possible for them to wash up and assume the show smile which it is the custom to wear on an occasion of this kind.

The first night's crowd was a large one, every aisle being jammed. Exhibitors seem to think it will be a good show for business; Philadelphia shows always are. "Sold" cards began to appear on display cars before the exhibition was five hours old, and if last year's experience is repeated, the majority of the show cars will be sold before the end of the week, with an additional string of duplicate sales shown by the cards attached to the original ones.

One feature of the show which was unfavorably commented upon was the disproportionate size of the various spaces. Early applicants were assigned in two instances about one-eighth each of the central floor space, leaving the remaining three-quarters to be divided among a score. Either larger halls must be secured or the sizes of spaces should be limited, and so apportioned that the various machines can be given equal representation.

A better place than Broad Street for demonstration purposes could hardly be secured. Leading straight from the heart of the automobile district to the Armory, where the show is being held, with the majority of the larger garages strung along the highway, a telephone call from the Armory to the garage—if the machine wanted is not one of the score lined up along the curb—will bring the machine to the hall in less than ten minutes. A block below, Diamond Street, a thoroughfare almost equally wide, leads direct to Fairmount Park, a mile and a half away. A fairer opportunity for showing a car's best "paces" could not be desired.

Memories of cycle-show days were revived by the reappearance of souvenirs. A few of the exhibitors have adopted this device to advertise their wares, and their booths are constantly surrounded by eager inquirers—for souvenirs.

Some of the concerns which failed to secure suitable spaces and refused to accept odd corners, are holding individual shows outside. The Quaker City Automobile Company, 140 North Broad Street, is one of these. For an individual show the building and display are rather pretentious. The entire Madison Square Garden exhibits of the Oldsmobile company, the Franklin Mfg. Co., the Pope Motor Car Co., and the White Sewing Machine Company being installed there. Admission, of course, is free, with music, refreshments and souvenirs on the side.

Following is a resumé of some of the exhibits at the Armory:

*Banker Brothers Company.*—One of the largest and most comprehensive exhibits in the show, made up of the fourteen vehicles which constituted the company's display at the New York show. Peerless, Autocar, Stevens-Duryea and Pierce machines are represented, including the Stevens-Duryea skeleton that broke records on the Florida beach last month.

*Keystone Motor Car Co.*—One of the two big exhibits, made up of fourteen vehicles, including besides the Rambler line, with and without tops, the Santos Dumont, Baker electrics, Phelps touring car, Acme touring car and the Reber. The most comprehensive exhibit in the Armory, offering the prospective buyer a choice ranging from a $650 runabout up to a $2,500 touring car. All the larger cars have tops. The Model L Rambler attracts much attention

*H. S. Lane Motor Car Co.*, local agents for the Packard, Orient Buckboard and Northern; a very pleasing exhibit, installed in one of the handsomest booths in the Armory. The Packard chassis is included in the display, while the Buckboard delivery is an object of interest, especially to the smaller tradesman. The piece de resistance of the exhibit—if not, indeed, of the show—is the $3,000 Packard Voiture Légere.

*Winton Motor Carriage Co.*—Philadelphians at least regard the Winton as the representative American automobile. The layman knows the Winton represented this country in last year's international cup race, hence his interest in the Winton and all that pertains to it Inquiries for the famous Winton "projectiles" indicate that not a few visitors are disappointed at the non-appearance of the Bullets; but the fine display makes amends for any shortcoming in this respect.

*Knox Automobile Co.*—The reputation that the Knox three-wheeler acquired locally two years ago, when the tireless little runabout ran around the track constantly during show hours, makes the "waterless" machines great favorites with Philadelphians. Several of the surrey, tonneau and runabout Knoxes were in the regular space, and crowded away off in a corner of the Armory was the delivery wagon

*The Pope Motor Car Co.*—This exhibit is presided over by genial "Bob" Garden, who shows as much knowledge of the automobile as he does of the bicycle. Two gasoline cars—the new Pope-Hartford and the Pope-Tribune—and an electric, the Pope-Waverley, are shown, the latter equipped with both Edison and Exide batteries.

*John Wanamaker.*—The principal attraction at this stand seems to be "the fastest automobile in the world"—the "999"—which recently gave such a startling exhibition of ice navigation. Although handicapped for space, by reason of a rather late decision to exhibit, the Wanamaker force of decorators have made this booth one of the most attractive of the show. Besides the famous racer, the Ford chassis, and a brace of runabouts—one with tonneau—are shown.

*American Darracq Automobile Co.*—Immediately alongside the Wanamaker display, against the wall, the finely-finished Darracqs hold forth. Worthy a more fitting installation, the display, even in its inconvenient location, is always surrounded by hosts of admirers and information seekers. The exhibit is substantially that seen at Paris and New York.

*Boss Knitting Machine Works.*—This Reading, Pa., concern shows the 8-hp. Boss steam car, the salient feature of which is that kerosene oil only is used for fuel and for light. The claim that this car is absolutely explosion-proof seems to be borne out by a careful inspection of

the vehicle, which lists at $1,200. A vehicle of this type recently covered 142 miles of hilly country on a trifle less than ten gallons of kerosene, at a cost of about ninety cents for the trip.

*Manhattan Storage Co.*, shows three models of the Toledo steamer, besides a full line of auto lamps and other accessories.

*Berg Automobile Co.*—This Cleveland concern brings its full exhibit from New York, including two canopy-top tonneaus, a limousine and two chassis. The exhibit is in charge of the company's experts who talk intelligently on the features of the machines which is in marked contrast to the efforts of some of the salesmen similarly occupied at some of the other exhibits.

*National Sewing Machine Company.*—One Eldridge machine represented by two runabout models, is shown by the local selling agents, the Hart Cycle and Automobile Co. The transmission, lubrication and clutch devices are shown detached. These trim little cars received much favorable comment.

*Mayo Damper Co.*, motorcycle manufacturers of Pottstown, Pa., are showing their 2-horsepower machine, an important feature of which is the grip control.

*Charles Krauss.*—The Indian motorcycle was shown and demonstrated inside and outside the building, Mr. Krauss being local agent.

*Charles E. Miller.*—But just established in this city, the Miller branch jumps to the front at once with one of the finest exhibits of automobile supplies in the show. Souvenir auto horns seem to render the Miller booth doubly attractive.

*Bradley Motor Co.*—This Philadelphia firm of motorcycle builders shows two of the three models which it builds, a racer and a road machine. The racer has a 3 1-2 horsepower engine, with mechanically operated exhaust and inlet valves. The road machine is provided with combination "companion seat," which may be used as a luggage carrier or repair stand, as well as a tandem seat.

*Reeser & McKenzie.*—This local firm shows the Black Diamond 2-horsepower motorcycle. A novel grip control and friction clutch are features of this machine, which has but recently been put on the market.

*A. Krouse.*—A line of second-hand machines and of lamps, bells and sundries of every description is shown by Mr. Krouse who deals in second-hand goods.

*Keystone Willow Mfg. Co.* shows a fine line of automobile baskets and hampers, including several designs of gasoline tank baskets for carrying additional fuel on long runs. This concern keeps in stock baskets to fit the lines of all the more prominent makes of automobiles.

*Wall & Ochs.*—A line of automobile spectacles and eye shields is displayed by this firm of local opticians.

*Rose Mfg. Co.*—A comprehensive line of Neverout automobile and motorcycle lamps and acetylene gas generators. The familiar big lamps of the Neverout concern are here, and cast an effulgence upon the entire show that reminds the spectator of twin light-houses.

*Wm. Hjorth & Co.* show their line of automobile wrenches in four sizes, with an attendant to give practical demonstrations of the operation of this handy tool.

*De Laski & Thropp Circular Woven Tire Co.*—Automobile tires of various weights for pleasure and business vehicles are displayed by this Trenton, N. J., company.

*Emil Grossman.*—The exhibit of French automobile tires, lamps and accessories which was seen at Madison Square Garden last week.

*Philadelphia Electric Co.*—A large charging outfit for electric machines, the Westinghouse and Wagner systems being shown in operation. The building is lighted from current generated by these exhibits, the plant being installed in two days.

*Jacob Reed's Sons.*—A full line of gentlemen's black and tan leather and fur auto coats, caps, long and short boots and leggins, goggles, and gloves in all styles, fur-lined, is shown. A line of chauffeurs' garments includes leather and fur coats, caps, knickerbockers and long trousers. The French kid goods are especially attractive. Fur lap-robes are also shown in great variety. This firm's combination auto coat, in black and tan, capable of being transformed into a coat and pair of trousers, interests many. The value of this exhibit is nearly $6,000.

*Standard Automobile Co.*—Shows 16 and 10-horsepower Decauville cars and a chassis of the former. The protection of the engine and transmission from dust and mud by means of the pan, which practically encloses them on the lower side, is a feature that is favorably commented upon. Philadelphians wonder that some such scheme is not more generally adopted by manufacturers. exposed machinery being the cause, as one expert puts it of fully 50 per cent. of the injury and wear to chains and bearings.

*German and French Automobile Industry.*—Represented by S. De Feher, engineer, located in this city. Shows the Benz-Parsifal, the De Dion-Bouton and the Panhard. This concern, which is but recently established here, has quarters at the Belmont Auto Station in West Philadelphia.

*Dalsimer Automobile Co.*—Shows the Crestmobile, and the Dalsimer Standard motorcycle at $210 and the Dalsimer motorcycle at $135—the motorcycles being local products of which much is expected. The company has just put up a new and fully equipped storage, repair and sales station at 1615 North Willington Street.

*Gawthorpe & Wister.*—Here are shown the Yale and Elmore vehicles for which this firm is local agent. The Elmore doctor's coupé, listed at $900 is the only vehicle of the kind in the show.

*Hart Cycle & Automobile Co.*— Exhibits the Eldredge vehicle. Mr. Hart is the pioneer cycle dealer of Philadelphia, and his determination to enter the automobile field against so many younger competitors is characteristic of him.

*Pennsylvania Electric Vehicle Co.*—This company, having recently acquired the local agency for the Cadillac, has three complete cars and a chassis on exhibition, besides the Columbia gasoline 14-horsepower runabout with tonneau—a very handsome car, much admired for the beauty of its finish.

*Union Motor Truck Co.*—Has on exhibition the Chambers gasoline truck which took part in last year's contest for business vehicles in New York. It has been much improved since last year, and the company expects to enter it in the competition next March in New York.

*Philadelphia Auto Service Co.*—D. Walter Harper, manager, is showing two styles of Stanley chainless steam cars. This company is now located in Germantown, a suburb, but in a few weeks quarters will be secured on Automobile Row.

*Swedish Auto Garment Co.*—A fine line of leather automobiling and hunting coats for men and women. The attendant in charge booked numerous orders during the show, taking measurements and guaranteeing delivery in five weeks.

*J. L. Gilney & Bro.*—Solid rubber tires for commercial vehicles of every description comprise this firm's display.

*American Motor Co.*—The Marsh motorcycle, with two-seater attachment, is shown by this Brocton company.

---

## Recent Incorporations.

The Clark Carburetor Co., Cleveland; capital, $25,000; to make automobile supplies. Incorporators, Erasmus D. Sawyer, George R. McKay, Edward C. Root, Clarence T. Snyder, W. H. B. Cromwell.

Mutual Automobile Storage Co. Incorporators, Samuel W. Pickford, Nathan H. Baker, Charles T. Richardson, Alexander M. Speer, Jr., and William G. Kinsman. Capital stock, $60,000.

Consolidated Motor Co., Islip, Suffolk county, N. Y.; to manufacture motors, etc.; capital, $50,000. Incorporators and directors for first year: L. M. Palmer, H. U. Palmer, L. M. Palmer, Jr., all of Brooklyn, N. Y.

Carbon Motor Vehicle Company, New York; capital, $100,000. Directors: C. A. Carbon, Brooklyn, and Leopold Soudheim and Eugene Soudheim, New York.

Norris Auto Company, Saginaw, Mich.; capital, $12,000.